Environmental Assessment

Bird Damage Management to Protect Property, Livestock and Human Health and Safety in Oregon

Lead Agency:

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Wildlife Services

Cooperating Agencies:

State of Oregon
Department of Fish and Wildlife

State of Oregon
Oregon Department of Agriculture

State of Oregon
Department of Human Services

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LIST OF ACRONYMS

APHIS	Animal and Plant Health Inspection Service (USDA agency)
BBS	Breeding Bird Survey
CBC	Christmas Bird Count
CDC	Center for Disease Control
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DEQ	Department of Environmental Quality
EA	Environmental Assessment
EIS	Environmental Impact Statement
EJ	Environmental Justice
EO	Executive Order
EPA	Environmental Protection Agency
et al.	et alia (and others)
FAA	Federal Aviation Administration
FDA	Federal Drug Administration
FY	Fiscal Year (October 1 through September 31)
IWDM	Integrated Wildlife Damage Management
MIS	Management Information System
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NWRC	National Wildlife Research Center
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife
ODHS	Oregon Department of Human Services
OSHA	Occupational Safety and Health Administration
T&E	Threatened and Endangered Species
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
WNV	West Nile Virus
WS	Wildlife Services (USDA-APHIS program)

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1.0 PURPOSE AND NEED FOR ACTION

1.1 Introduction

United States Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) Wildlife Services program (WS) has been requested by Oregon property managers from dairy, feedlot, landfill, airport and other properties to assist in alleviating problems caused primarily by starlings, pigeons (rock doves) and house sparrows (English sparrows), and to a lesser extent blackbirds and crows. Birds cause damage by congregating in large numbers to feed on livestock feeds, threaten aircraft safety, deface property, and create a potential for disease transmission.

Wildlife Services is proposing a wildlife damage management program that could be conducted under cooperative agreements, Memoranda of Understanding (MOU) or other comparable documents on private, county, municipal, or state lands, including airport properties, in Oregon.

Wildlife Services is the Federal agency authorized by Congress to protect American resources and human health and safety from damage caused by wildlife. The primary statutory authorities for the APHIS-WS program are the Animal Damage Control Act, which authorized APHIS-WS to reduce damage caused by wildlife in cooperation with other agencies [Animal Damage Control Act of March 2, 1931, as amended (46 Stat. 1486; 7 U.S.C. 426-426c)], the Rural Development, Agriculture and Related Agencies Appropriations Act of 1988 (Public law 100-102, Dec. 22, 1987, Stat. 1329-1331; 7 U.S.C. 426c) and the Fiscal Year (FY) 2002 Agriculture Appropriations Bill. Wildlife Services is the lead agency for this EA. Cooperating agencies include Oregon Department of Fish and Wildlife (ODFW), Oregon Department of Agriculture (ODA), and Oregon Department of Human Services (ODHS). The cooperating agencies provided input to this EA and will continue to participate according to their authorities and responsibilities. Appendix D details agency authorities and related environmental compliance requirements.

1.2 Objective

The primary objective of this proposal is to assist resource managers and property owners in preventing or reducing bird damage to dairies, feedlots, landfills, property, and airports, as well as to protect human health and safety and property from the target species (listed in 1.3) in Oregon.

This Environmental Assessment (EA) evaluates alternative wildlife damage management strategies to resolve conflicts with the bird species defined in Section 1.3. Target species include non-protected birds and birds that are under the Depredation Order in Oregon. The EA analyzes the impacts of a proposal and alternatives on various environmental resources and issues.

1.3 Species

Oregon's non protected depredating bird problems involve non-native European starlings (*Surnus vulgaris*), pigeons (also known as feral pigeons or rock doves) (*Columba livia*), and house sparrows (also called English sparrows) (*Passer domesticus*). Other depredating birds which may be taken under a depredation order 50 Code of Federal Regulations (CFR) §21.43) without a Federal permit are red-winged blackbirds (*Agelaius phoeniceus*), Brewer's blackbirds (*Euphagus cyanocephalus*), and brown-headed cowbirds (*Molothrus ater*), and American crows (*Corvus brachrhynchos*).

1.4 Wildlife Services Record Keeping Regarding Requests For Damage Management Assistance

Wildlife Services maintains a Management Information System (MIS) database to document requests for assistance that the agency receives, and assistance provided in addressing wildlife damage conflicts. This data is limited to information that is collected from people who have requested services or information from WS. It does not include requests received or responded to by local, State, or other Federal agencies and it is not a complete database for all wildlife damage occurrences. The number of requests for assistance does not necessarily reflect the extent of need for action, but this data does provide an indication that a need exists, and the number of calls addressed to the Wildlife Services program.

The database includes information that can be used to indicate the need for the program, and to assist with an analysis of the effects on the environment. The species of wildlife causing or threatening damage, the resource in need of protection; the number of individual birds removed; tools and methods used to alleviate the conflict; and the reported dollar damage to a resource before the damage was resolved are some of the pieces of information WS managers use to assess the program. Table 1-1 shows an indication of the need for action in terms of the number of requests for assistance directed to WS, and the dollar damage reported.

Table 1-1. Number of requests for assistance and reported dollar damage involving European starlings, pigeons, house sparrows, blackbirds (red-winged blackbirds, brown-headed cowbirds, and Brewer's blackbirds), and American crows for Oregon Wildlife Services from Fiscal Year (FY) 2001-2004 (MIS Data, unpublished reports (USDA 2005a)).*

Fiscal Year	*Dairies & Feedlots*	*Airports*	*Landfills*	*Other Properties*	***Total***
2002	54 requests $97,235	2 requests $25,000	n/a	48 requests $21,581	**104 requests $143,816**
2003	16 requests $30,600	n/a	3 requests $3,000	75 requests $16,991	**94 requests $50,591**
2004	25 requests $446,100	2 requests $0	1 request $900	74 requests $32,050	**102 requests $479,050**
Avg. Per Year	**32 requests $191,312**	**2 requests $8,333**	**1 request $1,300**	**66 requests $23,541**	**100 requests $224,486**

* Data presented in this table were taken from OR WS MIS reports which represent the number of requests for assistance and the dollar damage reported before assistance was provided.

The public often asks WS to account for resource losses, damages attributable to individual species, and funding spent on individual methods for managing wildlife (Bergman 2000). WS does not track its funding by species causing damage or by methods used. Instead, WS tracks its expenditures by resource category protected. Monetary damage attributed to invasive wildlife species and reported to WS is minuscule when compared to the overall damages caused by these species. Damages such as threats to human health and safety (i.e., aircraft), or losses of a natural resource (i.e., an Endangered species) are not easily measured. Monetary value is only given if a lawsuit is brought forth in order to recover loss.

1.5 Need for Action

When WS receives requests to relocate or remove flocks and roosts of birds, the reasons for the request are rarely attributable to only one type of damage and usually include a combination of issues. For example, the following section on conflicts with birds at dairies and feedlots covers the range of problems that can occur including feed consumption; fecal contamination; simple mechanical safety complaints (slippery work surfaces) from employees working in areas with accumulations of fecal material; and the potential for disease transmission among livestock production facilities. Similarly, when WS receives requests to assist with bird conflicts in other areas, the complaints include damage to property from fecal material, aesthetic complaints related to noise, odor or mess and, usually to a lesser extent, concerns about the potential for disease transmission. With the exception of bird hazards to aircraft, rarely is one type of damage or concern the only reason for requesting assistance from WS.

Dairy and Feedlots

Livestock production is Oregon's second most important agricultural commodity. Milk and beef production from Oregon's dairies and feedlots contribute significantly to Oregon's

economy. Statewide, the most recent published data showed cash receipts for milk at dairies (2004) and cattle and calves at feedlots (2003) totaling $741,400,000. Cash receipts for milk production valued $359,500,000, and cash receipts for cattle and calves on feed valued $381,900,000 (Oregon State University 2005). Because livestock producers are becoming more aware of the Oregon WS program, the number of complaints directed to the program is expected to increase.

Feed Losses: Birds destroy vast amounts of stored grain and livestock feed by consumption and contamination. Blackbirds, starlings, sparrows, pigeons and crows often cause damage at cattle feeding facilities by congregating in large numbers to feed on the grain component of cattle feed. The basic constituent of most rations used in feedlots and dairies is silage and the high energy portion is usually provided as barley, which may be incorporated as whole grains, crushed or ground cereal. While cattle cannot select for individual ingredients from that ration, birds can and do select the barley, thereby altering the energetic value of the complete diet. The removal of this high energy fraction by birds, is believed to reduce milk yields and weight gains, and is economically significant to such intensive animal production systems (Feare 1984). Glahn and Otis (1986) reported that starling damage was also associated with proximity to roosts, snow and freezing temperatures, and the number of livestock on feed.

Starlings can do significant damage because they consume up to 50% of their body weight in feed each day (Forbes 1995). When thousands of birds infest a facility, damages can be substantial for individual operators. Livestock feed losses to starlings have been estimated by Besser et al. (1968) in feedlots near Denver, Colorado at $84 per 1,000 birds. Forbes (1995) reported that starlings consume up to 50% of their body weight in feed each day. Glahn and Otis (1981) reported losses of 4.8 kg (10.6 lbs.) of pelletized feed consumed per 1,000 bird minutes. Glahn (1983) reported that 25.8% of farms in Tennessee experienced starling depredation problems of which 6.3% experienced significant economic loss.

A large cattle feeding operation in the panhandle of Texas had upwards of 1,000,000 blackbirds and starlings using the facility per day. This estimate was made by a trained WS Specialist (personal communication from R. Smith, 2000). The operators had a similar facility that did not have bird damage problems. They reported that, based on a comparison of feed losses, livestock health problems (primarily Coccidiosis), and water trough maintenance costs (continuous labor costs for cleaning bird droppings out of water troughs), bird damage was costing them approximately $5,000/day (USDA 1999).

Property Damage: Costs associated with property damage include labor and disinfectants to clean and sanitize equipment and remove fecal droppings, implementation of wildlife damage management methods, and loss of property use, but

these costs are generally not included in damage estimates. Facilities need to remove bird droppings that pose slipping hazards on structures such as walkways and handrails. Crows indirectly affect livestock feed by pecking at and damaging silage coverings so that silage spoils.

Health Concerns at Livestock Facilities: Starlings and blackbirds have been implicated in the transmission of livestock diseases such as the gastroenteritis virus, salmonella, tuberculosis, and coccidiosis (Weber 1979, Gough and Beyer 1982). Cryptococcosis is a fungal disease spread by pigeons and starlings to livestock that may result in chronic, usually fatal, meningitis. A dairy operator in Taylor county, Wisconsin and his consulting veterinarian highly suspected that starlings were responsible for transmitting Salmonella to his dairy cattle where 40 Holstein dairy calves died from the disease. The monetary damage from the dead calves and associated veterinary bills was approximately $21,000 (USDA 2004a).

A consulting veterinarian for a large cattle feeding facility in Texas indicated that problems associated with Coccidiiosis declined following reduction of starling and blackbird numbers using the facility (USDA 1999). See also the general discussion of health and safety impacts noted below.

The goal of agricultural and human health programs is to prevent diseases/illness from occurring. Similarly agricultural biosecurity programs are designed to prevent diseases from occurring in the first place, and, in the instance that a disease outbreak occurs or a Foreign Animal Disease is detected, to prevent the spread of the disease. The presence of large numbers of wild birds that can and do move among multiple farms can be a risk to these biosecurity efforts (Clark and McLean 2003).

The Public Health Service activities in the area of milk sanitation began at the turn of the century with studies on the role of milk in the spread of disease. These studies led to the conclusion that effective public health control of milk borne disease requires the application of sanitation measures throughout the production, handling, pasteurization, and distribution of milk. The 2003 Revision of "Grade A" Pasturized Milk Ordinance recommended by the U.S. Department of Health and Human Services and the U.S. Food and Drug Administration (FDA) is used as the sanitary regulation for milk and milk products (FDA 2005). The Milk Ordinance says "Cows should not have access to piles of manure, in order to avoid the soiling of udders and the spread of diseases among cattle" and it also says manure may not accumulate so as to permit the soiling of udders. Regulations in some states require fowl to be kept out of milking barns, stables, cow yards, and loafing and housing areas for fear of contamination. These regulations have been issued for dairy cattle because the accumulation of bird feces where cattle can lay could potentially contaminate the udder with pathogens and contamination of feed bunks

with bird feces could transmit disease. Pigeons, starlings, and blackbirds commonly create concerns at dairies because of the sheer numbers that invade and can soil areas that need to kept clean for proper sanitary conditions required for milk production.

Health Concerns

Pigeons, starlings and house sparrows are hosts to at least 38 diseases which are transmissible to humans and pets including, salmonellosis, tuberculosis, toxoplasmosis, ornithosis (psittacosis), cryptococcosis, encephalitis and Newcastle's disease (Weber 1979, Grough and Beyer 1982). Papers like Clark and McLean (2003) which reviews pathogens of agricultural and human health interest in blackbirds and Hubàlek (2004) which lists pathogenic organisms in migratory birds provide an indication of the range of potential disease risks associated with wild birds. A list of diseases transmissible to humans and livestock that area associated with pigeons, European starlings and house sparrows as well as a list of some of the diseases associated with these species can be found in Appendix A. For most of these diseases, the risk of transmission to humans is likely very low.

The is no current policy or procedure within Oregon to regularly test birds for particular diseases, and absence of records of disease occurrence in Oregon does not necessarily mean absence of risk, but may only mean lack of reliable research in this area. Few studies are available on the occurrrence and transmission of zoonotic diseases in wild birds. Study of this issue is complicated by the fact that some disease-causing agents associated with birds (e.g. Salmonella), may also be contracted from other sources. The goal of agricultural and human health programs is to prevent disease/illness from occurring. Wildlife Services works with cooperators on a case-by-case basis to assess the nature and magnitude of the wildlife conflict including providing information on the limitations about what we know regarding health risks associated with large flocks and roosts of birds. It is the choice of the individual cooperator to tolerate the potential health risks or to seek to reduce those risks.

People who come into direct contact with bird droppings or who are exposed to droppings-contaminated dust through ventilation systems (i.e., heating and air conditioning equipment) are at greatest risk of contracting bird-bourne diseases. Of the diseases listed in Appendix A and discussed above, salmonellosis, ornithosis and histoplasmosis appear to represent the most likely potential hazards to public health.

Histoplasmosis is a fungal disease that affects the lungs which is caused by the organism *Histoplasma capsulatum* (USDA 2005b). The fungus grows best in soils having a high nitrogen content, especially those enriched with bird manure. The accumulated feces at bird roosts has long been know to be associated with the occurrence of this illness. In most instances of health risks associated with roosts, the roost has been in place over a period of years. The disease is generally contracted when the soil/feces below the roost is disturbed by

wind on dry soil or human activity. Long term residents of areas near roosts often test positive for *Histoplasma* exposure. The histoplasmosis organism can also be carried on the wings, feet and beaks of birds and infect the soil under roosting sites and in manure accumulations inside or outside of buildings. Viable *H. capsulatum* remains in the soil and can be contracted by humans years after the roost is abandoned (Clark and McLean 2003). As with many diseases, infants, young, the elderly, and those with compromised immune systems are at greatest risk of severe illness.

Salmonellosis is a well documented human and animal pathogen. In humans, this organism most often results in "food poisoning" characterized by acute intestinal pain and diarrhea. Several types of the Salmonella bacteria are carried by wild birds with varying degrees of impact on humans and livestock. Friend (1999) reported relative rates of detection of *Salmonella spp*. In free ranging birds. *Salmonella spp*. isolates were frequent in songbirds, common in doves and pigeons, occasional in starlings blackbirds and cowbirds and infrequent in crows. The New York State Department of Agriculture and Markets reported experiencing increasing numbers of avian-origin Salmonella outbreaks in cattle in the State and attributed these outbreaks to the contamination of feed and facilities with fecal material from birds (USDA 2005b).

Ornithosis (*Chlamydia psittaci*) is another respiratory disease that can be contracted by humans, livestock, and pets. Pigeons are most commonly associated with the spread of Ornithosis to humans. Ornithosis is a virus that is spread through infected bird droppings when viral particles become airborne after infected bird droppings are disturbed.

Airports

Bird strikes cost U.S. civil aviation over $500 million a year (1990-2003) (Bird Strike Committee USA 2004a). The collision of aircraft with birds is a serious concern at airports throughout Oregon. Bird strikes can cause damage to aircraft, loss of power, and even crashes. In 2004, bird strikes caused $3,073,500 in aircraft repairs and an additional $14,700 in other costs in Oregon (FAA 2005). Out of the 923 wildlife strikes reported in Oregon from 1990-2004, 915 of those were of bird strikes (Cleary et al. 2005).

All species of wildlife can pose a threat to aircraft and human safety. However, some species are more commonly involved in aircraft strikes than others. Doves/pigeons, and blackbirds/starlings are two among the top five of the most commonly struck bird groups. Table 1-2 presents the numbers of strikes for these bird groups, strikes with damage and strikes having a negative effect-on-flight (Cleary et al. 2005).

Table 1-2. Number of reported strikes, strikes with damage, and strikes having a negative effect-on-flight for two of the five most commonly struck bird groups with civil aircraft in the USA (1990-2004).

Species group	**Reported strikes of U.S. civil aircraft**		**Strikes with damage**		**Strikes with effect on flight**	
	15 year total	*% of total known*	*15 year total*	*% of total known*	*15 year total*	*% of total known*
Doves/ pigeons	3,330	14	255	7	285	11
Blackbirds/ starlings	2,452	10	142	4	170	7

Starlings are the second most abundant bird in North America with a late-summer population of over 150 million birds (Bird Strike Committee USA 2004b). Starlings have a body density 27% higher than herring gulls. In addition, blackbirds and starlings have caused some of the most damaging and fatal bird strikes in the United States (Cleary and Dolbeer 1999) and elsewhere (Thorpe 1996, 1998). Although these birds are small (1.5-2.2 oz, Dunning 1993), their higher body density relative to other birds (Seamans et al. 1995), their large populations, and their flocking behavior (Dolbeer et al. 2003) enhances the severity of the hazard for damaging strikes.

Cleary, et al. (2005) state that they estimate that less than 20% of all wildlife strikes involving U.S. civil aircraft are reported to the FAA. In Oregon, starlings were reported striking aircraft 36 times, pigeons were reported 11 times, American crows and sparrows were each reported 8 times and blackbirds were reported 6 times (January, 1990 to May, 2005) (FAA 2005). Applying the Cleary et al. (2005),estimate to FAA strike reports (FAA 2005), we may expect actual incidents of at least 180 strikes involving starlings, 55 strikes involving pigeons, 40 strikes each involving crows and sparrows, and 30 strikes involving blackbirds (January, 1990 to May, 2005).

On March 30, 2004, a Boeing 747 departing a Kentucky airport struck anywhere from 60-100 European starlings and ingested birds into the #3 and #4 engines. The engine lost power but was not shut down. An emergency was declared and the aircraft returned safely. Engine blades were replaced. On another occasion, a Boeing 767 left Chicago and struck a flock of Passerines (song birds) causing a compressor stall which caused the engine to flame out. Approximately 11,000 gallons of fuel were dumped over Lake Michigan before returning to land (Cleary et al. 2005).

Significant strikes involving starlings and pigeons have occurred in Oregon. On August 28, 1999, a MD 80 struck a flock of starlings at Portland International Airport (PDX) on take off and ingested birds into both engines. Two passengers were medically treated and the aircraft was out of service for 60 hours. The total amount reported for the incident was $81,000 (FAA 2005). On March 4, 2001 a DHC 8 struck 2-10 pigeons on the climb. The aircraft had damage reported on the leading edge, the prop and cone and the #1 engine, which had to be replaced. Damage was reported at $752,500 (FAA 2005).

Wildlife Services has utilized several techniques to deter wildlife from utilizing airports including habitat modification, pyrotechnics, propane cannons, trapping, and shooting. A list of additional techniques utilized at airports can be found in Chapter 9 of Cleary and Dolbeer (1999). In Advisory Circular 150/5200-33A (FAA 2004), Section 3-7 states "if an existing land-use practice creates a wildlife hazard and the land-use practice or wildlife hazard cannot be immediately eliminated, airport operators must issue a Notice to Airmen and encourage the land-owner or manager to take steps to control the wildlife hazard and minimize further attraction" (FAA 2004). Part 139.337 of the Federal Aviation Regulations, Subpart D states that "in accordance with its Airport Certification Manual and the requirements of this section, each certificate holder shall take immediate action to alleviate wildlife hazards whenever they are detected (Cleary and Dolbeer 1999).

Landfills

Birds are attracted to landfills due to an abundance of edible waste. Bird control at landfills is needed to prevent the spread of diseases that birds may carry from the landfill to surrounding communities (Beleant et al. 1998; Norton 1986; Butterfield et al. 1983; Mudge and Ferns 1982; Fenlon 1981; Hall and Jones 1978; Williams et al. 1977; Crew 1967).

State of Oregon Department of Environmental Quality (DEQ) has regulatory authority over landfills including vector issues such as birds. All owners or operators of municipal solid waste landfills must comply with CFR 40, §258.22 which requires that landfills must prevent or control on-site populations of disease vectors (i.e., any animal that is capable of transmitting diseases to humans) for the protection of human health and the environment . Oregon Administrative Rules (OAR 340-94-040 (10)) states that landfills shall ensure effective means to minimize bird attraction such as periodically covering materials (Oregon State Archives 2005). Landfill operators can still be plagued by bird problems even with diligent covering as specified in individual permits because waste is received throughout the day. A permit violation can result in fines or possible closure depending on the nature of the violation, and the permit holder's history of compliance. Multiple minor violations can result in a fine, a single serious violation can result in a fine. Maximum fines may be up to $10,000 per day for every day that the facility is out of compliance (personal consultation, Timm Schimke, 2005).

Municipal solid waste landfills are also required by law to comply to siting criteria in relation to airports. The Code of Federal Regulations (40 CFR 258.10) and OAR 340-94-040 (10) states these facilities that are located within 10,000 feet (3,048 meters) of any airport runway end used by turbojet aircraft or within 5,000 feet (1,524 meters) of any airport runway end used by only piston-type aircraft must demonstrate that the landfill is designed and operated so as not to create a bird hazard to aircraft. A prohibition on placing new waste municipal solid waste landfill near airports was enacted in Section 503 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (Ford Act), Pub. L. 106-181 (49 U.S.C. 44718 note). This prohibits construction or establishment of new municipal solid waste landfills (after April 5, 2000) within six miles of certain smaller public airports.

Safety for landfill workers is also a concern when large flocks of birds interfere with safe operation of heavy equipment, and even dive bomb workers (Hall 2003). Large flocks of birds could obscure the viewing area of bulldozer operators which already have a limited viewing area due to large, vertical grilled bars that extend from the bucket of the bulldozer to help push the garbage. A study showed that birds were not frightened by the large bulldozers and that feeding remained constant through the dispersal of refuse (Boyle 2002).

Other Damage (Property and Nuisances)

Property damage caused by birds can entail numerous resources and usually is not important nationally but may be significant on a local or regional basis. Birds can damage structures on neighboring property primarily from fecal contamination and nesting material. Corrosion damage to metal structures and painted finishes of buildings, aircraft, vehicles and other property, can occur because of uric acid from bird droppings. Accumulated bird droppings can reduce the functional life of some building roofs by 50% (Weber 1979). Electrical utility companies frequently have problems with birds and other animals causing power outages by shorting out transformers and substations (USDA 2000).

Businesses may also be concerned about the negative aesthetic appearance of their property caused by excessive droppings, and are sensitive to comments by clients and guests. Occupational Safety and Health Administration (OSHA) fined a Hoboken, NJ manufacturing company $673,400 for failing to abate hazards associated with "severe accumulations of pigeon droppings" (OSHA 1999).

Certain bird species and their associated nesting material and droppings may create nuisances or safety hazards. Pigeon and starling droppings can deface signs and cause significant losses to maintain billboards. Accumulations of droppings may produce an objectionable odor,

accelerate deterioration of buildings and increase maintenance costs. Bird manure deposited on park benches, cars, statues, and unwary pedestrians is aesthetically displeasing.

The pigeon can be host to the pigeon nest bug (*Cimex* spp.), the chicken flea (*Ceratophyllus* spp.) and the northern fowl mite (*Ornithonysus* spp.). Of these, the northern fowl mite is the most important economic pest because of its ability to infest commercial flocks of chickens and reduce the productivity of affected birds. These ectoparasites readily bite humans but there are no real human health threats beyond dermal irritations (Williams and Corrigan, 1994).

1.6 Decision To Be Made

Based on agency relationships, MOUs and legislative mandates, WS is the lead agency for this EA, and therefore responsible for the scope, content and decisions made. The Oregon Department of Agriculture (ODA), Oregon Department of Fish and Wildlife (ODFW) and Oregon Department of Human Services (ODHS) had input during preparation of the EA to ensure an interdisciplinary approach in compliance with National Environmental Policy Act (NEPA) and agency mandates, policies and regulations.

Based on the scope of this EA, the decisions to be made are:

- Should WS conduct a bird damage management program in Oregon to alleviate damage to agriculture, property, and human health and safety?
- Would the proposed action have significant impacts on the quality of the human environment requiring preparation of an EIS?

1.7 Scope

This EA evaluates WS program activities to protect dairies, feedlots, landfills, and airports in Oregon, including property and human health and safety, from damages by the target species listed in Section 1.3.

1.8 Site Specificity

The current program occurs in Morrow, Umatilla, Malheur, Deschutes, Douglas, Lane, Tillamook, Yamhill, Polk, Linn, Benton, Marion, Clatsop, Columbia, Washington, Crook, Harney, Klamath, Gilliam, and Wallowa Counties. The proposed action may include new counties in Oregon where assistance is requested.

This EA emphasizes the environmental issues as they relate to specific areas whenever possible, however, the issues relating to wildlife damage management may occur. Wildlife Services personnel use the WS Decision Model (Model) (Figure 2-1) as the "*on the ground*" site-specific procedure for each damage management action conducted by WS. The Model is

an undocumented thought process that guides WS though the analysis and development of the most appropriate individual strategy to reduce damages and detrimental environmental effects from damage management actions. The Model (Slate et al. 1992) and WS Directive 2.105 - Integrated Wildlife Damage Management Program (USDA 2004b) describe the site-specific thought process that is used by WS. Decisions made using the Model would be in accordance with plans, goals, and objectives of WS, United States Fish and Wildlife Service (USFWS), ODFW, Federal Aviation Administration (FAA), and any mitigation and standard operating procedures described herein and adopted or established as part of the decision.

1.9 Public Involvement and Notification

Public participation in the NEPA process for this proposal is being conducted consistent with Wildlife Services' NEPA procedures. The public involvement and notification process will be threefold:

1) Issues related to the proposed action were identified during interagency scoping, consultation with other state WS programs and through an initial public outreach process. The public outreach included an information gathering phase wherein potentially interested groups and individuals were contacted (representing conservation groups, resource owners and managers, technical experts, and government officials). Letters describing the proposal and preliminary issues and alternatives and inviting public comment were sent to the public through the U.S. Postal Service (June 29, 2005). A 30-day public comment period was provided for initial public input. Five letters were received from groups and individuals interested in providing input for the development of this EA. The letters received were considered in this analysis and substantive and relevant information was incorporated into this document.

2) Legal notices were published August 10, 2005 in The Oregonian and Salem Statesmen Journal, August 11, 2005 in the Bend Bulletin and August 17, 2005 in the Tillamook Headlight Herald, soliciting comments on this EA during a 30-day public comment period. All groups or individuals expressing interest during the public involvement periods were sent a copy of this predecisional EA for review and comment. All substantive and relevant comments received will be considered.

3) After all public comments have been evaluated and considered, WS expects to release a decision. The EA will be revised if warranted based on input received during the public involvement process. Groups and individuals submitting comments during any phase of the public involvement periods will receive a notice of the decision.

2.0 DESCRIPTION OF ALTERNATIVES

2.1 Introduction

This chapter describes the three alternatives. The first Alternative is the program that is currently in place. The second Alternative would consist of technical assistance by WS. The third Alternative is for no lethal program at all.

2.2 Alternative 1 (Proposed Action/Current Program/No Action)

The proposed action is to continue the current program to provide assistance to managers at dairies, feedlots, landfills, airports and other properties to reduce or prevent damages associated with the bird species defined in Section 1.3. Wildlife Services would continue to administer an adaptive Integrated Wildlife Damage Management (IWDM) program to alleviate bird damages. Wildlife Services is authorized by Federal law to assist the public and others in resolving conflicts with depredating birds and other wildlife. The "No Action" alternative is a procedural NEPA requirement (40 CFR 1502.14(d)), and is a viable and reasonable alternative that could be selected, and serves as a baseline for comparison with the other alternatives. The No Action alternative, as defined here, is consistent with the Council on Environmental Quality's (CEQ) (1981) definition.

Wildlife Services has responded to requests for assistance by providing either technical assistance (self-help advice) or operational damage management assistance (i.e., direct control). Under the proposed action, WS would continue to provide technical assistance and operational damage management, including non-lethal and lethal management methods by applying a Decision Model to help determine the most appropriate action(s) to take. Wildlife Services Directive 2.105 describes WS' IWDM approach to select the most practical and appropriate methods to resolve conflicts with depredating birds. The proposed action would consist of nonlethal and lethal methods, would be implemented on private and public lands of Oregon where a need exists, where a request is received, and when funding is available. Cooperators requesting assistance are provided with information regarding the use of effective nonlethal and lethal techniques. Cooperators may employ control methods independently or may ask WS for operational assistance. All WS management actions would comply with appropriate Federal, State, and local laws.

When appropriate, nonlethal methods could be recommended and utilized to reduce bird damage. In determining the damage management strategy, preference would be given to practical and effective non-lethal methods. However, nonlethal methods may not always be applied as a first response to each damage or potential damage situation. In some situations, birds would be removed with lethal methods. The most appropriate response could often be a

combination of nonlethal and lethal methods, or there could be instances where application of lethal methods alone would be the most appropriate strategy. Under the proposed action, WS would employ any or all of the nonlethal and lethal methods listed below. The individual methods are defined and discussed in detail in Appendix B.

Nonlethal methods may include habitat or animal behavior modification. In many situations, the implementation of nonlethal methods such as exclusion type barriers may be the responsibility of the requestor.

Lethal methods used by WS may include shooting, trapping, DRC-1339 (a toxicant used for starlings and pigeons), or euthanasia following live capture (shooting or CO_2 gas).

2.3 Alternative 2 - Technical Assistance Only (No Operational WS Program Alternative)

This Alternative would allow WS to provide technical assistance to operators in the form of recommendations, information and education. Under this Alternative, WS would not provide direct operational assistance to manage bird damage at dairies, feedlots, landfills, airports or other properties.

With no WS operational assistance, private individuals, communities, and government officials might either: (1) take no action; (2) implement control actions on their own; or (3) undertake or hire private companies to conduct bird damage management using various exclusionary or bird-dispersal techniques, cage traps or shooting. A primary difference between this Alternative and Alternative 1 is that DRC-1339 would not be available. Under this Alternative, bird damage problems could increase if private individuals were unable to find and implement effective means of controlling those species causing damage. This increase might result in greater impacts on agriculture, human health and safety, or property as a result of increased levels of unresolved bird damage.

2.4 Alternative 3 (Nonlethal Methods Only)

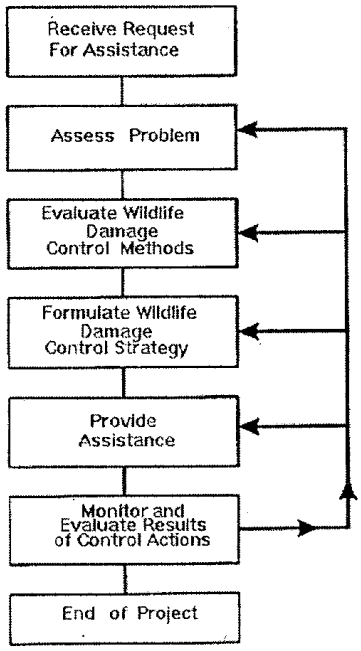
Alternative 3, Nonlethal Methods Only, would allow WS to implement only nonlethal methods and provide nonlethal technical assistance or make recommendations to livestock producers, airport and landfill managers, property owners or others requesting assistance for all land classes in Oregon. Any or all of the nonlethal methods described in Appendix B could be used or recommended under this Alternative.

2.5 Wildlife Services Decision Making

The WS Decision Model (Slate et al. 1992) is a procedure for evaluating and responding to damage complaints (Figure 2-1). Wildlife Services personnel are frequently contacted only

after requesters have tried wildlife damage methods and found them to be inadequate for reducing damage to an acceptable level. Wildlife Services personnel evaluate the appropriateness of strategies, and methods are evaluated for their availability (legal and administrative) and suitability based on biological, economic and social considerations. Following this evaluation, the methods deemed to be practical for the situation are developed into a management strategy. After the management strategy has been implemented, monitoring is conducted and evaluation continues to assess the effectiveness of the strategy. If the strategy is effective, the need for management is ended. In terms of the Model, most damage management efforts consist of continuous feedback between receiving the request and monitoring the results with the damage management strategy.

Figure 2-1. APHIS, WS Decision Model (Slate et al. 1992)



2.6 Mitigation in Standard Operating Procedures for Wildlife Damage Management Techniques

Wildlife Services incorporated mitigation into Standard Operating Procedures that serve to prevent or reduce impacts that otherwise might result from an action. The current WS program, nationwide and in Oregon, uses many such measures and these are discussed in detail in Chapter 5 of Wildlife Services National Programmatic Final EIS (USDA 1997, revised). The following measures presented in Table 2-1 apply to the Alternatives as indicated by the "X" in the columns.

Table 2-1. Standard Operating Procedures

Standard Operating Procedures	ALTERNATIVES		
	Alt. 1 Proposed Action	Alt. 2 Tech. Assist. Only	Alt. 3 Nonlethal Methods Only
Animal welfare and humaneness of methods used by WS			
WS would continue to improve the selectivity and humaneness of management devices.	X	X	X
The use of newly-developed, proven, non-lethal methods would be encouraged when appropriate.	X	X	X
The WS Decision Model would be used to identify effective biological and ecologically sound bird damage management strategies and their impacts.	X	X	X
Euthanasia procedures approved by the American Veterinary Medical Association are applied when feasible.	X	n/a	n/a
Euthanasia procedures that do not cause pain would be used when feasible.	X	n/a	n/a
All live traps would be maintained with food and water.	X	n/a	n/a
Safety concerns regarding WS' wildlife damage management methods			
The WS Decision Model, designed to identify the most appropriate management strategies and their impacts, is used to determine management strategies.	X	X	X
Research is being conducted to: 1) improve bird damage management methods and strategies, 2) increase selectivity for target species, 3) develop effective non-lethal methods, and, 4) evaluate non-target hazards and environmental impacts.	X	X	X
All pesticides are registered with the Environmental Protection Agency (EPA) and ODA.	X	n/a	n/a
EPA-approved label directions would be followed by WS employees.	X	n/a	n/a
Avicides and live traps would be primarily restricted to private lands.	X	n/a	n/a
WS employees that use pesticides are trained and certified to use pesticides under EPA approved certification programs.	X	n/a	n/a

Standard Operating Procedures	ALTERNATIVES		
	Alt. 1 Proposed Action	Alt. 2 Tech. Assist. Only	Alt. 3 Nonlethal Methods Only
WS employees, who use pesticides, participate in ODA approved continuing education to keep abreast of developments and maintain their certifications.	X	n/a	n/a
Live traps would be placed so that captured animals would not be readily visible from any road or public area.	X	n/a	n/a
Warning signs would be posted at locations where DRC-1339 is applied. These signs would be removed at the end of the wildlife damage management period.	X	n/a	n/a
Avicide use, storage, and disposal conforms to label instructions and other applicable laws and regulations.	X	n/a	n/a
Material Safety Data Sheets for avicides are provided to all WS personnel involved with specific damage management activities.	X	n/a	n/a
Concerns about impacts of wildlife damage management activities on Threatened &Endangered (T&E) species and non-target species.			
WS consulted with the USFWS regarding the Oregon and nation-wide programs. Wildlife Services has determined that this proposal would have no effect on threatened or endangered speices. This determination is based on consultations with USFWS (USDA 1997, revised and ongoing), in Oregon, and in the Formal Risk Assessment contained in USDA (1997, revised, Appendix P).	X	X	X
Wildlife Services would initiate consultation with the USFWS if in the future any of its actions may affect T&E species.	X	X	X
Management actions would be directed toward localized populations or groups and/or individual offending birds.	X	X	X
The presence of non-target species is monitored before using DRC-1339 to reduce the risk of mortality to non-target species.	X	n/a	n/a
If non-target species are present or likely to be present where DRC-1339 is being applied, then WS would remain on site to discourage non-target visitation.	X	n/a	n/a
Wildlife Services personnel are trained and experienced to select the most appropriate method for taking targeted animals and excluding non-target species.	X	n/a	n/a

2.7 Wildlife Damage Management Strategies and Methodologies Available to WS in Oregon

The strategies and methodologies described below are commonly utilized by WS. The methods used or recommended by WS would be supported by the WS Decision Model (Slate et al. 1992).

Integrated Wildlife Damage Management (IWDM)

The most effective approach to resolving wildlife damage is to integrate the use of several methods simultaneously or sequentially. The philosophy behind IWDM is to implement effective management methods in a cost-effective[1] manner while minimizing the potentially harmful effects on humans, target and non-target species, and the environment. This management technique draws from an array of options to create a combination of methods for the specific circumstances. This approach may incorporate habitat modification (i.e., altering food, water, shelter opportunities), animal behavior modification (i.e., exclusion), local population reduction, or any combination of these, depending on the characteristics of the specific damage problem. Appendix B details methods of IWDM in detail. In selecting management techniques for specific damage situations consideration is given to:

- Species responsible for damage
- Magnitude of the damage
- Geographic extent of damage
- Duration and frequency of the damage
- Prevention of future damage
- Presence of non-target species, including threatened or endangered species

Technical Assistance Recommendations

The implementation of damage management actions is the responsibility of the requester, however, WS personnel provides information, demonstrations, and advice on available and appropriate wildlife damage management methods. Technical assistance includes demonstrations on the proper use of management devices (i.e., propane exploders, exclusionary devices, cage traps, etc.) and information on habitat and animal behavior modification that could reduce damage. Technical assistance is generally provided following consultation, or an on-site visit with the requester. Generally, several management strategies are described to the requester for short and long-term solutions to damage problems; these strategies are based on the level of risk, need, and practical application.

[1]The cost of management may sometimes be secondary because of overriding environmental, legal, human health and safety, animal welfare, or other concerns.

Operational Damage Management Assistance

This is the conduct or supervision of damage management by WS personnel. Operational damage management assistance is initiated when the problem cannot effectively be resolved through technical assistance, and when Agreements for Control or other comparable documents provide for WS direct damage management. The initial investigation defines the nature, history, extent of the problem, species responsible for the damage, and methods that would be available to resolve the problem. Professional skills of WS personnel are often required to effectively resolve problems, especially if restricted pesticides are proposed, or the problem is complex requiring the direct supervision of a wildlife professional. Wildlife Services considers the biology and behavior of the damaging species and other factors using the WS Decision Model. The recommended strategy(ies) may include any combination of preventive and corrective actions that could be implemented by the requester, WS, or other persons as appropriate. Two strategies are available: 1) preventive damage management and 2) corrective damage management.

Preventive Damage Management- is the practice of applying wildlife damage management strategies before damage occurs, based on historical problems and the probability of the damage recurring and an imminent threat of public health or disease transmission. As requested and appropriate, WS personnel provide information and conduct demonstrations or take action to prevent historical losses from recurring. Examples would be applying bird-proof netting over fruit trees before the fruit becomes attractive to birds and the removal of a bird(s) from a food processing plant, restaurant, or feedlot before the bird(s) has caused damage or threat to public or livestock health.

Corrective Damage Management- is applying wildlife damage management to stop or reduce current losses. As requested and appropriate, WS personnel provide information and conduct demonstrations, or with the appropriately signed Agreement for Control or other comparable documents, take action to prevent additional losses. For example, in areas where birds are consuming livestock feed, WS may provide information to the resource owner about mechanical scare devices and pyrotechnics, or conduct operational damage management to reduce losses.

Educational Efforts

Education is an important element of WS program activities because wildlife damage management is about finding balance and coexistence between the needs of people and needs of wildlife. This is extremely challenging as nature has no continual balance, but rather, is in continual flux. In addition to the routine dissemination of recommendations and information to individuals or organizations sustaining damage, educational presentations may be provided to other interested groups.

A research facility within USDA assists WS with resolving problems by investigating the biology and behavior of animals. The National Wildlife Research Center (NWRC) helps develop and improve technology, evaluate the impact of wildlife management practices on wildlife and the environment and develop cooperative research and training with other organizations. Additionally, WS personnel attend conferences and professional meetings where technical papers are presented so that personnel get updated on recent developments in damage management technology, programs, laws and regulations, and agency policies.

CHAPTER 3: ENVIRONMENTAL ISSUES

3.1 Introduction

The EA emphasizes relevant issues as they relate to specific areas whenever possible; however, many issues generally apply wherever wildlife damage and resulting management occur, and are treated as such. Wildlife Services determined through interagency consultation and through the initial public involvement that the following issues should be considered in the decision making process for this EA to help compare the impacts of the various alternatives management strategies:

3.2 Environmental Issues

Issues drive the analysis and are used to compare the environmental impacts of the different management strategies.

3.2.1 Issues Driving the Analysis

The following issues have been identified as areas of concern for analysis in Chapter 4 of this EA:

- What are the primary and secondary hazards of DRC-1339 on the environment?
- What are the views of the humaneness of the alternatives?
- Would there be a potential to affect non-target species, including threatened and endangered species?
- Is there a concern for the aesthetic value of these birds?
- How effective might the alternatives be in reducing threats and damages?
- What impact will this proposal have on target species?

3.2.2 Issues Not Analyzed In Detail With Rationale

Resources not affected. The actions proposed involve no ground disturbance or effects on vegetation. Therefore, the following resource values in Oregon are not expected to be adversely affected by the alternatives analyzed: soils, geology, minerals, water quality/quantity, flood plains, wetlands, visual resources, prime and unique farmlands, aquatic resources, timber, wilderness, and range. No emissions other than the use of fossil fuels for routine vehicle use, shooting, and euthanization procedures. There will be no measurable effect on air quality. These resources will not be analyzed further. In addition, no issues have been identified relative to bird damage management that is inconsistent with Executive Order (EO) 12898 (Federal Actions To Address

Environmental Justice in Minority Populations and Low-Income Populations), or EO 13045 (Protection of Children from Environmental Health Risks and Safety Risks).

When treated bait cannot be used or when baits are not initially consumed, the bait is disposed according to label instructions. It is not anticipated that the proposed action would result in any adverse cumulative effects from solid or hazardous wastes.

When treated bait cannot be used or when baits are not initially consumed, the bait is disposed according to label instructions. It is not anticipated that the proposed action would result in any adverse cumulative effects from solid or hazardous wastes.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

Chapter 4 provides information needed for making informed decisions and in selecting the appropriate Alternative for meeting the purpose of the proposed action. Each major issue defined in Chapter 3 is evaluated under each alternative (defined in Chapter 2) and the environmental impacts are analyzed.

4.2 Evaluation Methodology for Determination of Significance

National Environmental Policy Act regulations describe the elements that determine whether or not an impact is "significant". Significance is dependent upon the context and intensity of the action. The factors used to evaluate the significance of impacts in this EA can be found in USDA (1997, revised) and include the magnitude of the impact (size, number, or relative amount of impact) (intensity); the duration and frequency of the impact (temporary, seasonal impact, year round or ongoing) (intensity); the likelihood of the impact (intensity); the geographic extent (limited to the immediate project area(s), the State of Oregon or beyond) (context); and the legal status of a species that may be removed, or conformance with regulations and policies that protect the resource in question (context).

4.3 Monitoring

Wildlife Services, in coordination with the cooperating agencies, would monitor any program that results from this EA and report those results annually. Wildlife Services would determine if any additional information that arises subsequent the NEPA decision would trigger the need for additional NEPA analysis or compliance. Wildlife Services would review program results and the EA annually, or as needed, to ensure that the need for action, issues identified, alternatives, regulatory framework, and environmental consequences are consistent with this EA.

4.4 Impact of Alternative 1 - Proposed Action (Current Program and "No Action" Alternative)

4.4.1 Primary and Secondary Hazards of DRC-1339. DRC-1339 has three different labels (Appendix C) that WS may use under Alternative 1. The toxicant, DRC-1339, is used in accordance with EPA label requirements (Appendix C) to minimize both primary and secondary hazards to non-target animals. Special precautions are taken to prevent non-target ingestion. Prior to the application of DRC-1339, for example, observation during pre-baiting is required to monitor for non-target species that may

consume treated bait. If non-target species that could consume treated bait are observed, then the use of DRC-1339 would be postponed or not applied, therefore threatened and endangered (T&E) species would not be affected by DRC-1339 during application.

It has been published that target species usually die from DRC-1339 anywhere from a few hours to 3 days (Williams et al. 1994). Goldade (et al. 2004) states that time to death is typically greater than 24 hours since excretion of the residue compound exits the body within 4 hours. At that time, virtually all of the toxicant in their body has been metabolized and excreted, effectively eliminating the possibility of secondary poisoning. While this avicide is highly sensitive to the target species, in nonsensitive species, the process requires 10-100 times more DRC-1339 (USDA 2001). In relation to secondary toxicity and aquatic toxicity, often, the risk is low due to low concentrations (USDA 1997, revised). Goldade (et al. 2004) further states that it is fairly clear that carcasses of birds found are unlikely to contain significant residues of DRC-1339 which would eliminate potential secondary exposure of DRC-1339.

This avicide is generally unstable in the environment and degrades rapidly when exposed to sunlight and heat or ultraviolet radiation (USDA 2001). It is also highly soluble in water but does not hydrolyze. Photodegradation occurs in water with a half-life that ranges from 6.5 to 41 hours, depending upon the season (faster in warmer climates). This avicide is tightly bound to soil (70-90 percent) and has low mobility. It is only moderately toxic to fish but some invertebrates may be very sensitive to the compound. The New Zealand Food Safety Authority said "DRC-1339 is an organochloride, but does not appear to have the persistence or the tendency to accumulate in the food chain that other organochlorides have" (New Zealand Food Safety Authority 2002). Based on a formal risk assessment, APHIS concluded that, when DRC-1339 is used according to label directions, it is selective for target individuals or populations, and such use has negligible impacts on the environment (USDA 1997, revised).

Wildlife Services field personnel follow the labels and utilize the utmost precaution when using DRC-1339. Personnel ensures that the treated bait is placed in areas that will not get moisture (e.g., rain, snow) to prevent runoff of any toxicants to waterways or soil. Personnel also ensures that the treated bait is cleaned up after baiting is completed.

Currently, the use of toxicants by WS in all instances is regulated by the EPA through the Federal Insecticide Fungicide Regulation Act, by MOUs with other agencies, the state of Oregon, and by WS Directives. Oregon WS applicators are licensed by the State of Oregon as Certified Applicators and are trained in bird control.

4.4.2. Humaneness of the Alternative. The issue of humaneness, as it relates to the killing or capturing of wildlife is an important and complex concept that can be interpreted in a variety of ways. Schmidt (1989) indicated that vertebrate pest damage management for societal benefits could be compatible with animal welfare concerns, if "...the reduction of pain, suffering, and unnecessary death is incorporated in the decision making process."

Suffering is described as a "...highly unpleasant emotional response usually associated with pain and distress." However, suffering "...can occur without pain...," and "...pain can occur without suffering..." (American Veterinary Medical Association (AVMA) 1987). Because suffering carries with it the implication of a time frame, a case could be made for "...little or no suffering where death comes immediately..." (California Department of Fish and Game (CDFG) 1999), such as shooting.

Defining pain as a component in humaneness of WS methods appears to be a greater challenge than that of suffering. Pain obviously occurs in animals. Altered physiology and behavior can be indicators of pain, and identifying the causes that elicit pain responses in humans would "...probably be causes for pain in other animals..." (AVMA 1987). However, pain experienced by individual animals probably ranges from little or no pain to significant pain (CDFG 1999).

Pain and suffering, as it relates to WS damage management methods, has both a professional and lay point of arbitration. Wildlife managers and the public would be better served to recognize the complexity of defining suffering, since "...neither medical or veterinary curricula explicitly address suffering or its relief" (CDFG 1999).

Therefore, humaneness, in part, appears to be a person's perception of harm or pain inflicted on an animal, and people may perceive the humaneness of an action differently. The challenge in coping with this issue is how to achieve the least amount of human and animal suffering with the constraints imposed by current technology and funding.

Wildlife Services has improved the selectivity and humaneness of management techniques through research and development and research is continuing to bring new findings and products into practical use. Until new findings and products are found practical, a certain amount of animal suffering could occur when some wildlife damage management methods are used in situations where non-lethal damage management methods are not practical or effective. In addition, Oregon WS personnel are experienced and professional in their use of management methods so that they are as humane as possible under the constraints of current technology, workforce and funding.

Some individuals and groups are opposed to some of the management actions of WS. Most animal welfare organizations do not oppose the concept of wildlife damage control. However, these organizations support restrictions on control methods perceived by them as inhumane, and strongly emphasize the use of non-lethal controls. Animal right advocates oppose any killing or harming animals for human gain, because they believe animals have rights equal to or similar to humans (Schmidt 1989, Wywialowski 1991). Most wildlife managers agree that lethal control is a sound and sometimes necessary wildlife resource management practice (Berryman 1987). Wildlife Services control methods employed under Alternative 1 are listed in Appendix B. Descriptions of those methods are found in the USDA (1997, revised).

4.4.3 Effects on Non-Target Species Including Threatened and Endangered Species. A common concern among members of the public and wildlife professionals, including WS personnel, is the impact of damage control methods and activities on non-target species, particularly T&E species. Wildlife Services' standard operating procedures include measures intended to avoid effects on T&E species populations (Chapter 2). To reduce the risks of adverse effects to non-target species, WS would select damage management methods that are target selective or apply such methods in ways to reduce the likelihood of capturing or killing non-target species. The methods used under the Current Program are selective for target species.

Some non-target species may actually benefit from IWDM. Prime examples are the benefit to native cavity nesting bird species that results from any reduction in starling populations or the benefit to a number of bird species, including some T&E species, that results from reductions in populations of brown-headed cowbirds which parasitize nests of other birds.

Threatened and endangered species lists from the USFWS and State of Oregon were reviewed to identify potential effects on Federal and State listed T&E species. In Oregon there are 43 federally listed T&E animal species, 2 proposed species and 8 candidate species as of August 4, 2005 (USFWS 2005). There are 36 species listed under the Oregon T&E list (ODFW 2004) (last updated September 17, 2004). Wildlife Services has determined that the proposed action would have no effect on T&E species for the reasons discussed in Section 4.4.1, Primary and Secondary Hazards of DRC-1339 and for those reasons discussed below.

These determinations were made based on the formal Risk Assessment for products and methods used in the WS program (USDA 1997, revised, Appendix P).

Birds: The Aleutian Canada goose, bald eagle, American peregrine falcon, Arctic peregrine falcon and the Northern spotted owl will not be affected by the use of DRC-

1339. The toxicant, DRC-1339, is used in accordance with EPA label requirements (Appendix C) to minimize both primary and secondary hazards to non-target animals. Prior to the application of DRC-1339, pre-baiting is required to monitor for non-target species that may consume treated bait. If non-target, including T&E, species that could consume treated bait are observed, then the use of DRC-1339 would be postponed or not applied. Wildlife Services uses trained professional employees to conduct wildlife damage management programs and monitor work areas. The formal risk assessment contained in USDA (1997, revised, Appendix P) concluded no probable risk to raptors from secondary poisoning (American kestrels, bald eagle, and peregrine falcon). The Aleutian Canada goose which could be affected directly by consuming DRC-1339 would be unlikely to be found in proposed project locations, but could easily be identified and modifications to the project implemented to avoid any exposure. The proposed project would not occur within habitat of the northern spotted owl.

Reptiles, Amphibians, Fish & Water Invertebrates: Wildlife Services field personnel follow the labels and utilize the utmost precaution when using DRC-1339. Personnel will not place treated bait in areas that will get moisture (e.g., rain, snow) so that runoff of any toxicant to waterways could affect fish or water invertebrates. Personnel also ensure that the treated bait is removed after baiting is completed. The formal risk assessment contained in USDA (1997, revised, Appendix P) concluded no probable risk to aquatic organisms from using DRC-1339.

4.4.4 Concern for the Aesthetic Value of the Birds. There may be concern that the proposed action or the action alternatives would result in the loss of aesthetic benefits to the public, resource owners, or neighboring residents. Wildlife generally is regarded as providing economic, recreational, and aesthetic benefits (Decker and Goff 1987, USDA 1997, revised), and the mere knowledge that wildlife exists is a positive benefit to many people.

Aesthetics is the philosophy dealing with the nature of beauty or the appreciation of beauty. Therefore, aesthetics is subjective in nature, dependent on what an observer regards as beautiful. Human dimensions of wildlife damage management include identifying how people are affected by problems or conflicts between them and wildlife, attempting to understand people's reactions, and incorporating this information into policy and management decision processes and programs (Decker and Enck 1996, Decker and Chase 1997). Local residents who are experiencing damage may want effective methods to be employed, whereas unaffected parties may not see any need for action. Aesthetically speaking, a passerby may view a large flock of depredating birds with great delight, whereas the property owner may view the same birds with disdain. "Wildlife acceptance capacity" is the limit of human tolerance for wildlife or the maximum number of a given species that can coexist compatibly with local human

populations. Wildlife acceptance capacity is also known as the "cultural carrying capacity". These terms are important in urban areas, because they define the sensitivity of a local community to a specific wildlife species. For any given damage situation, there will be varying thresholds by those directly and indirectly affected by the damage. This threshold of damage is a primary limiting factor in determining the wildlife acceptance capacity.

The attraction to animals has been well documented throughout history and started when humans began domesticating animals. The American public is no exception and today a large percentage of households have pets. However, some people may consider individual wild animals and birds as "pets" or exhibit affection toward these animals, especially people who enjoy coming in contact with wildlife. Therefore, the public reaction is variable and mixed to wildlife damage management because there are numerous philosophical, aesthetic, and personal attitudes, values, and opinions about the best ways to manage conflicts/problems between humans and wildlife.

Wildlife populations provide a range of social and economic benefits (Decker and Goff 1987). These include direct benefits related to consumptive and non-consumptive use (i.e., wildlife-related recreation, observation, harvest, sale), indirect benefits derived from vicarious wildlife related experiences (i.e., reading, television viewing), and the personal enjoyment of knowing wildlife exists and contributes to natural ecosystems (i.e., ecological, existence, bequest values) (Bishop 1987). Direct benefits are derived from a user's personal relationship to animals and may take the form of direct consumptive use (using up the animal or intending to) or non-consumptive use (viewing the animal in nature or in a zoo, photography) (Decker and Goff 1987). Indirect benefits or indirect exercised values arise without the user being in direct contact with the animal and come from experiences such as looking at photographs and films of wildlife, reading about wildlife, or benefitting from activities or contributions of animals such as their use in research (Decker and Goff 1987). Indirect benefits come in two forms: bequest and pure existence (Decker and Goff 1987). Bequest is providing for future generations and pure existence is the knowledge that the animals exist (Decker and Goff 1987).

Oregon WS recognizes that all wildlife has aesthetic value and benefit. Wildlife Services only conducts wildlife damage management at the request of the owner or manager of the affected property and actions are carried out in a caring, humane, and professional manner.

Wildlife Services recognizes the aesthetic importance of wildlife and associated viewing opportunities. Under Alternative 1 (current program) there would continue to be some local impacts on individual birds or flocks. However, wildlife populations as a whole

have not been negatively affected, and there has been no measurable decline in public viewing opportunities. This trend would be expected to continue.

4.4.5 Program Effectiveness. The effectiveness of the program is not an environmental "issue" as defined by NEPA, but is included in the analysis to communicate with the public and assist decision makers with making informed management decisions while weighing the environmental concerns.

Under Alternative 1, all methods are used as effectively as practically possible, in conformance with the WS Decision Model, WS Directives and relevant Federal, State and local laws and regulations. The efficacy of each method is based, in part, on the application of the method, the skill of the personnel using the method, and the guidance provided by WS Directives and policies for WS personnel.

Wildlife Services personnel are trained in the effective use of each wildlife damage management method. All WS personnel applying pesticides are certified by the State of Oregon as Certified Applicators. If shooting is determined to be an effective method for a specific damage problem, all personnel utilizing firearms receive training on the safe use of firearms (Appendix B). Their ability in most cases to target specific depredating individuals without affecting the overall population is the very essence of effectiveness.

Wildlife Services believes that it is important to maintain the widest possible selection of damage management methods to effectively resolve wildlife damage problems. Some methods may be more or less effective, or applicable depending on weather conditions, time of year, biological considerations, economic consideration, legal and administrative restrictions, or other factors. The USDA (1997, revised) concluded that the IWDM program was the most effective of the alternatives considered.

4.4.6 Impact on Target Species. A common concern among members of the public and wildlife professionals, including WS personnel, is the effect of wildlife damage management on the target species population. Wildlife Services' take of target species is small in comparison to the overall population of these species, many of which are considered "anthropogenic abundant" (Conover 2002). Monitoring of WS' take will be conducted routinely along with coordination with cooperating agencies to ensure take is within acceptable levels for wildlife management agencies.

Method of analysis: Precise counts of the bird populations addressed in this EA do not exist. When scientifically sound population estimates are lacking, it is common practice for management agencies to use population trend analyses to determine if species populations are "increasing", "stable", or "decreasing". These trend analyses

are determined by taking actual counts at specific locations at regular intervals and comparing several years data. It is acknowledged that these counts represent only a portion of the actual population and that the data gathered are insufficient to extrapolate a good population estimate. However, with an attempt to maintain the integrity of the sites, counts, and intervals it is a scientifically accepted monitoring tool.

Data was extrapolated from both the United States Geological Survey (Breeding Bird Survey (BBS)), Patuxent Wildlife Research Center and the Audubon's Christmas Bird Count (CBC) (National Audubon Society 2005). The BBS is a summer bird count while the CBC is a winter bird count. Trends were gathered from the BBS in Oregon over 38 years and trends from the pacific Northwest over 25 years (Table 4-1). The Audubon's CBC does not provide trends so total bird count numbers were calculated and graphed to provide the most comparable information. Counts from the CBC are conducted over 3 weeks in December and January and run over the New Year. The count years in the CBC graphs reflect the year the data ended (i.e., if data was collected between December 1979-January 1980, the data would be in Count Year 80, data from December 2004 and January 2005 would be in Count Year 105, etc.). The data from these two surveys, coupled together, might provide a more holistic view.

Wildlife Services NWRC took data from the CBC, and created graphs by taking the numbers reported and running a simple linear regression for each. The R2 value is an estimate of how well the line (model) fits the data. Thus, if all the data points fall close to the line, the R2 would be close to 0.99, which is close. The "Y=" is the equation for the line. The number by the "X" is the slope of the line, which most significant for this EA. If it is positive, then the model suggests the number of birds is increasing through time. Negative means there is a decreasing trend.

These data are not exact and may not represent species that are considered common or typical. Winter weather patterns often affect bird migrations, sometimes accelerating, delaying, or disrupting movements. Winter surveys of migratory birds may be less reliable than summer surveys. Additionally, data from these two surveys are collected by volunteers, typically wildlife enthusiast from varied backgrounds. Volunteers might be more prone to observe and record species they are more familiar with (i.e., pigeons) or not record species that are more difficult to identify (i.e., a Brewer's blackbird). Blackbirds often fly in mixed flocks and may be difficult to identify the precise numbers of each species in one flock.

Table 4-1. Population Trends from Breeding Bird Survey in Percentage Change Over Time

Oregon Breeding Bird Survey	1966-2004 Oregon only	1966-1979 Oregon only	1980-2004 Oregon only	1994-2004 10 year trend in BC, CA, OR, WA	1979-2004 25 year trend in BC, CA, OR, WA
European Starling	0.1*	5.8**	1.3*	-2.50**	-2.64**
Pigeon	-0.3*	20.9**	-8.1*	.95*	-.38*
House Sparrow	-1.6*	0.6*	-0.8*	.20*	-.96**
Red-winged Blackbird	-1.4*	-0.7*	-0.6*	.12*	-.08*
Brown-headed cowbird	-2.0**	-4.0*	-0.3*	-4.13**	-1.74**
Brewer's blackbird	-2.5**	0.0*	-2.8**	-1.60**	-1.67**
American Crow	1.8**	2.5*	3.0**	-.57*	.93*

*P value is less than 0.05 and is considered to be statistically significant
**P value is greater than 0.05 and is not considered to be statistically significant

European Starling: Starlings *(Sturnus vulgaris)* were introduced into North America in 1890-91 when approximately 100 birds were released into New York City's Central Park (Cornell 2003). The starling is an exotic (invasive) species in North America, listed as an unprotected species by the USFWS and the ODFW. The birds, their eggs, and nests may be removed by any legal method. Starlings are subject to management under Executive Order 13112 (Invasive Species) as an invasive species. Starlings are not in the blackbird family (Icterid) but they have close behavioral patterns. They are gregarious (flock forming), especially in winter when they form roosts in the thousands, sometimes mixed with blackbirds.

Precise counts of starling and blackbirds do not exist, but the nationwide starling population has been estimated over 200 million (Cornell 2003). An extensive population survey by Dolbeer and Stehn (1983) showed that in the northwestern United States, the number of breeding starlings tripled between 1968 and 1981.

The BBS trends for starlings in Oregon shows an increase of 1.3% from 1980 to 2004 (see Table 4-1) (Sauer et al. 2005). Calculating a linear equation from Christmas Bird Count data (Figure 1 shown on Ch 4, Pg. 20) reveals that the number of starlings counted in the winter survey increased 48 percent from 1979 to 2004. The counts from CBC are deemed less reliable than BBS data but the trend is shown for comparison to supplement BBS trends.

Data from Packham (1965) suggests that an average of 57 starlings were killed per pound of DRC-1339 treated bait used at feedlots in Idaho. This report along with field observations suggested that approximately 68 to 74 starlings would be killed per gram of DRC 1339 concentrate applied (USDA 1999, and Tom Hall, pers. comm.). Based on this estimate and MIS reported take for other methods used (USDA 2005a), WS estimates that it took an average of 115,541 starlings each year from FY 2002 to FY 2004. The actual number of starlings removed may be higher or lower than the estimate since different carriers were used. Research studies and field observations suggest DRC-1339 treatments kill about 75% of the starlings at cattle feeding facilities (Besser et al. 1967). Wildlife Services estimates that starling take may increase to as many as 150,000-200,000 due to anticipated increases in requests for assistance. Numbers of birds removed by members of the public are not known. Increase of take by WS is not expected to contribute to a decline in the starling population. Because the starling is an invasive species, any effect on the population may be considered environmentally desirable.

Homan et al. (2005) developed a model for estimating mortality using bioenergetics. The Oregon WS program is in the process of working with the modelers to determine field applicability and may adopt this model for purposes of calculating take.

Blackbirds: Blackbird species that may be targeted under this program are Brewer's blackbird *(Euphagus cyanocephalus)*, red-winged blackbird (*Agelaius phoeniceus*), and brown-headed cowbirds (*Molothrus ater*). Blackbirds have slender, pointed bills; otherwise their structure is difficult to generalize (Sibley et al. 2001). They have iridescent black feathers and medium length tails.

The linear equation from the CBC data reveals that the number for Brewer's blackbirds counted in the winter survey increased 0.2 percent from 1979 to 2004 (Figure 2 shown on Ch 4, Pg. 20). The linear equation from the CBC data for red-winged blackbird data revealed a 5.7 percent decrease (Figure 3 shown on Ch 4, Pg. 20) while the data show brown-headed cowbirds decreased 46 percent (Figure 4 shown on Ch 4, Pg. 20) for birds counted in that 25 year period. Data from all three of these species from the CBC information shows erratic variation (high and low peaks) and does not follow the trend line closely. Although the BBS population trends show the populations of Brewer's blackbirds, red-winged blackbirds, and brown-headed cowbirds to have decreased from 1980 to 2004 (Table 4-1) (Sauer et al. 2005), blackbird populations are healthy enough that the USFWS has established a standing depredation order for use by the public. Under this "order" (50 CFR 21.43), no Federal permit is required by anyone to remove blackbirds if they are committing or about to commit depredations upon ornamental or

shade trees, agricultural crops, livestock, or wildlife, or when concentrated in such numbers and manner as to constitute a health hazard or other nuisance.

Wildlife Services lethally removed an average of two mixed blackbirds per year within a three-year period. Wildlife Services projects that this may increase to approximately 500 and potentially (but less likely) up to 1000 each of Brewer's blackbirds, red-winged blackbirds and brown-headed cowbirds due to anticipated increases in the number of requests, expanded geographic distribution of project sites, and the time of year of treatments. Blackbirds may be present in larger numbers, comprising a greater percentage of mixed starlings flocks in the late spring and fall than in winter. Historically, WS has done most of its control with DRC-1339 in winter months when blackbirds were more scarce in the project areas. Because the DRC-1339 label requires observation of bait sites during pre-baiting, WS estimates the percentage of blackbirds that it may take within flocks of starlings.

Dolbeer et al. (1995) showed that WS kills an average of four percent of the wintering population nationwide had no effect on breeding populations the following spring. Dolbeer et al. (1976) constructed a population model which indicated that a reduction of 15% of the wintering blackbird population would reduce the spring breeding population by 20% and that a 56% reduction in the wintering blackbird population would reduce spring breeding populations by only 33%. Given the density-dependent relationships in a blackbird population (i.e., decreased mortality and increased fecundity of surviving birds) a much higher number would likely have to be removed in order to impact the regional breeding population.

Crows: American crows *(Corvus brachyrhychos)* are distributed north to south from the Yukon Territory, Canada, to Baja California, Mexico and are found from the west coast to the east coast (Johnston 1961).

According to the BBS, the American crow population has shown a steady increase of about three percent from 1980 to 2004 (Sauer et al. 2005). The CBC data reveals that the number of crows counted in the winter survey increased 62 percent from 1979 to 2004 (Figure 5 shown on Ch, 4 Pg. 20). In the U. S., some crow roosts may reach up to two million birds (Cornell 1999). Crow populations are healthy enough, and the problems they cause great enough, that the USFWS has established a standing depredation order for use by the public. Under this "order" (50 CFR 21.43), no Federal permit is required by anyone to remove crows if they are committing or about to commit depredations upon ornamental or shade trees, agricultural crops, livestock, or wildlife, or when concentrated in such numbers and manner as to constitute a health hazard or other nuisance.

Wildlife Services has lethally removed an average of 58 crows per year over the last three years (USDA 2005a). Wildlife Services projects that this may increase to approximately 400 due to anticipated increases in requests. Numbers of birds removed by members of the public are not known. Wildlife Services does not expect to contribute towards a decline in the overall population.

Pigeons: Pigeons, also known as rock doves *(Columba livia)* were introduced into the United States as a domesticated bird, but many escaped and formed feral populations. The pigeon is now the most common bird pest associated with people (Williams et al. 1994). Calculating a linear equation from the CBC data reveals that the number of pigeons counted in the winter survey increased 313 percent (Figure 6 shown on Ch 4, Pg. 20) from 1979 to 2004. The BBS show the populations of pigeons to have decreased 8.1% (Table 4-1) from 1980 to 2004 (Sauer et al. 2005) yet pigeons are neither managed nor protected in Oregon. They are an exotic (invasive) species in North America, listed as an unprotected species by the USFWS. The birds, their eggs, and nests may be removed by any legal method. Pigeon management is subject to EO-13112 (Invasive Species), which directs Federal agencies to use their programs and authorities to prevent the spread or to control populations of invasive species that cause economic or environmental harm, or harm to human health. Any lethal Oregon WS wildlife damage management would likely be restricted to sites where pigeons are causing damage, are considered a health threat or nuisance, or where a reduction or removal of a local population could be attempted. This action would be considered beneficial since it would reduce disease threats and property damage/defacing.

Although BBS shows a negative trend for years 1980-2004, the CBC shows a steady increasing trend (Figure 7 shown on Ch 4, Pg. 20). Wildlife Services lethally removed an average of 2,221 pigeons per year from FY 2002-2004. (USDA 2005a). Wildlife Services expects this number to increase to 5,000. Because pigeons are an invasive species, it is not expected that this increase would have a negative effect.

Sparrows: House sparrows *(Passer domesticus)* are also known as English sparrows. They were introduced to North America from England in 1850 and have spread throughout the continent (Fitzwater 1994). The species is not protected by Federal or State laws. Like starlings and pigeons, because of their negative impacts and competition with native bird species, house sparrows are considered by many wildlife biologist, ornithologists and naturalists to be an undesirable component of North American native ecosystems. House sparrows are found in nearly every habitat except dense forest, alpine, and desert environments. It prefers human habitation and will even live inside man-made structures such as airport terminals, grain elevators, and cafeterias, anyplace with easy access to nest sites and food (Sibley et al. 2001). Any wildlife damage management involving lethal damage management by WS would

probably be restricted to individual sites. Any reduction in house sparrow populations, even to the extent of complete eradication at these sites, could be considered beneficial on populations of native bird species since house sparrows are considered an invasive species.

Although the BBS shows the populations of house sparrows to have decreased 0.8% from 1980 to 2004 (Sauer et al. 2005), a linear equation from the CBC data (winter 1979-2004) indicates an increase of 125 percent in Oregon (Figure 4-7). The house sparrow is an exotic (non-native) species in North America, and is listed as an unprotected species by the USFWS and the ODFW. The birds, their eggs, and nests may be removed by any legal method. Sparrows are subject to management under EO-13112 (Invasive Species).

Wildlife Services has lethally removed an average of 31 sparrows per year for the 3-year period (FY's 2002-2004) (USDA 2005a). Wildlife Services may remove up to 2,000 per year based on anticipated increases in requests. Because take is low in terms of overall numbers and its' status is invasive, this amount of removal is not expected to result in a negative effect on the environment.

4.5 Impact of Alternative 2 - Technical Assistance Only (No Operational WS Program) Bird Damage Management Should Be Conducted Using Only Non-lethal Methods.

4.5.1 Primary and Secondary Hazards of DRC-1339. Alternative 2 would not allow any WS direct operational IWDM in the area. Technical assistance or self-help information would be provided at the request of producers and others. The product DRC-1339 is classified as a "Restricted Use Pesticide" and is for use only by USDA personnel trained in bird control or persons under their direct supervision. Therefore there will be no risks from DRC-1339.

4.5.2 Humaneness of the Alternative. Alternative 2 is a modification of Alternative 1. No operational damage management assistance would be provided by WS. Wildlife Services would provide technical assistance consisting of education, recommendations and some training. Wildlife Services will not directly affect humaneness.

Although many techniques may be applicable, the individual requesting assistance would determine which recommendations to carry out. Operational management methods may be applied by people with little or no experience or knowledge in wildlife management or the humane treatment of animals. Therefore, although the recommended methods may be humane, the humaneness of their application may vary. It is likely that individuals with less experience will not be as humane in application of methods due to less experience and skill.

4.5.3 Effects on Non-target Species, Including Threatened, and Endangered Species. Wildlife Services would have no impact on non-target species including threatened or endangered, species. Wildlife Services would not be actively involved, and the possible impact of others is unknown. In some instances, it is possible that public frustration caused by an inability to reduce losses could lead to implementing control methods which may pose a greater possibility of affecting non-target, threatened, and endangered species.

4.5.4 Concern for the Aesthetic Value of Birds. Wildlife Services would have no impact on aesthetic values, because it would not be actively involved. If property owners conduct their own control methods, however, individuals experiencing damage may reduce aesthetic values depending on the extent of the type of damage technique they choose.

4.5.5 Program Effectiveness. The effectiveness of control measures under this alternative would most likely be decreased compared to Alternative 1, because direct control services offered by WS would no longer be available. The general public may not be skilled in the correct application of wildlife damage management, nor are all control measures generally available to the public (i.e., DRC-1339). Wildlife Services would only provide technical assistance and make recommendations when requested. The discussion under Section 4.6.5, Effectiveness of Alternative 3, the Nonlethal Only Program, is applicable to this Alternative.

4.5.6 Impact on Target Species. Wildlife Services would have no negative impact on target species. However, the loss of the WS operational damage management assistance program and DRC-1339 may cause public frustration and could lead to illegal use of other pesticides or chemicals, possibly negatively impacting target bird populations.

4.6 Impact of Alternative 3 (Nonlethal Only Program)

4.6.1 Primary and Secondary Hazards of DRC-1339. Alternative 3 would not allow any lethal control methods therefore there will be no risks from DRC-1339.

4.6.2 Humaneness of the Alternative. This Alternative would allow WS to utilize nonlethal IWDM methods (i.e., propane cannons, netting) as well as to advise (technical assistance) the property owner of nonlethal methods to implement. Although various techniques may be applicable, the individual requesting assistance would determine which recommendations to carry out. Kleingartner (2003) states "Keeping Wildlife Services program personnel from using the avicide DRC-1339 is not a

solution. It only forces independent producers to take whatever measures they deem necessary to protect their crops. Farmers may be forced to generate their own 'country' methods of controlling damage, and some of these control methods are not particularly friendly to any species." Kleingartner also notes that common tools (i.e., shotguns, high-powered rifles) used by farmers to manage wildlife damage are not only potentially dangerous but also ineffective since often the sound of a firearm only scatters the problem birds to another area. In this situation, operational management methods may be applied by people with little or no experience or knowledge in wildlife management or the humane treatment of animals. Therefore, although the recommended methods may be humane, the method used and the humaneness of their application may vary. It may be likely that individuals with less experience will not be as humane due to less knowledge and skill.

4.6.3 Effects on Non-target Species, including Threatened, and Endangered Species. Wildlife Services would have no impact on non-target species including threatened and endangered, species. Wildlife Services would recommend non-lethal methods only. Property owners would help choose which method, if any, to be utilized by WS (see section 4.5.2).

Most of the birds in this EA fall under the Depredation Order which states that no federal permit is required by anyone to remove them if they are committing or about to commit depredations upon agricultural crops, livestock, or wildlife, or when concentrated in such numbers and manner as to constitute a health hazard or other nuisance. It is possible that frustration caused by an inability to reduce losses could lead to the property owner managing the nuisance birds themselves. Individuals implementing control methods may pose a greater possibility of affecting non-target, including threatened or endangered, species.

4.6.4 Concern for the Aesthetic Value of the Birds. Alternative 3 would result in no impact by WS on local bird populations. Property owners would help choose which method, if any, to be utilized by WS (see section 4.5.2).

Most of the birds in this EA fall under the Depredation Order which states that no federal permit is required by anyone to remove them if they are committing or about to commit depredations upon agricultural crops, livestock, or wildlife, or when concentrated in such numbers and manner as to constitute a health hazard or other nuisance. It is possible that frustration caused by an inability to reduce losses could lead to the property owner managing the nuisance birds themselves.

4.6.5 Program Effectiveness. The effectiveness of this alternative would likely be lower than Alternative 1, because lethal methods of direct control offered by WS would

no longer be available. It is possible that the property owner may implement the control methods themselves (see section 4.5.2). This may result in more damage to wildlife, property, and human health and safety. Wildlife Services field personnel have been trained and certified in practical control actions.

A consideration and the measure of success of a non-lethal wildlife damage management program depends on where target birds relocate because a new site can also be a problem. In addition, most animals adjust and ignore a new sound, a process called habituation (Bomford and O'Brien 1990). Numerous non-lethal techniques have been used to reduce damage caused by many bird species with most having limited success, were labor intensive, impractical, expensive or were not effective in reducing damage (Parkhurst et al. 1987, Dolbeer et al. 1988, Tobin et al. 1988, Bomford 1990, Bomford and O'Brien 1990, Mott and Boyd 1995, Stickley et al. 1995, Andelt and Hopper 1996, Belant et al. 1996, Belant et al. 1998). Important points when using frightening strategies include the timing of their application and the choice of devices employed. An aggressive and integrated frightening program is essential (Bomford and O'Brien 1990). Playing animal vocalizations to disperse birds during the night, though, can be annoying to people trying to sleep, and could cause other disturbance to domestic animals and wildlife and people. In addition, using sounds based on animal vocalizations must have a certain degree of expertise and motivation to be successful (Bomford and O'Brien 1990).

Many aversive agents have been tested to condition birds to avoid foods, roosts and nest sites. Despite extensive research, the efficacy of these techniques remains unproven or inconsistent (Bomford and O'Brien 1990). In addition, most reported bird repellents are not currently registered by the EPA for this use an, therefore, cannot be legally used or recommended by WS for this purpose.

Limiting bird damage management to only non-lethal methods would not allow for a full range of management techniques to resolve damage management problems. Wildlife Services is authorized and directed by Congress to protect American agricultural and natural resources, and property. The alternatives selected for detailed analysis in this EA include non-lethal bird damage management methods and it is believed that analysis of only non-lethal methods would not allow WS the ability to address every damage situation in the most effective manner and expediency is required for public health and safety risks.

4.6.6 Impact on Target Species. Impacts on target species for Alternative 3 would be similar to Alternative 2. The loss of the WS operational damage management assistance program and DRC-1339 may cause public frustration (see section 4.5.2) and could lead to utilizing direct control methods themselves.

Table 4-2. Summary of Environmental Consequences

Alternatives / Issues	Alternative 1 - Proposed Action (Current Program)	Alternative 2 Technical Assistance Only	Alternative 3 Non-lethal Program Only
Primary and Secondary Hazards of DRC-1339	Negligible impacts on the environment.	No use of DRC-1339.	No use of DRC-1339
Humaneness of the Alternatives	Subjective. Involves some lethal control.	No lethal control by WS. Impact of others unknown. Possibly less humane and less target specific.	No lethal control implemented or advised by WS. Impact of others unknown. Possibly less humane and less target specific.
Effects on Non-target Species, Including Threatened, and Endangered Species	No overall impact observed over history of program. No impact would be expected.	No impact by WS. Impact of others unknown but the possibility of negative impacts would be greater than Alternative 1.	No impact by WS. Impact of others unknown but the possibility of negative impacts would be greater than Alternative 1.
Concern for the Aesthetic Value of the birds	Aesthetic value subjective. Ample viewing opportunities would persist.	No impact by WS. May be reduced.	No impact by WS. May be reduced.
Program Effectiveness	Has been effective on a site by site basis. It would be expected to be the most effective alternative.	It would be expected to be less effective than Alternative 1.	It would be expected to be less effective than Alternative 1.
Impact on Target Species	No overall impact observed over history of program. No overall impact would be expected.	No impact by WS. May be less effective than Alternative 1.	No impact by WS. May be less effective than Alternative 1.

4.7 Cumulative Impacts

Cumulative impacts are impacts on the environment that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions.

Natural mortality in blackbird/starling populations (adult and juvenile) is over 50% of the population each year, regardless of human-caused control operations (USDA 1997, revised,

Feare 1984). The northwest and southwest regional population of the blackbird/starling group has been estimated to be about 140 million (Meanley and Royall 1976). Estimated natural mortality of the blackbird group in the western region should therefore be about 70 million birds annually. An in-depth analysis of cumulative impacts to blackbirds and starlings can be found in the programmatic EIS ch.4 pp. 64-68 (USDA 1997, revised).

Invasive or nonnative species are known to damage the environment in a variety of ways. Johnson and O'Neil (2001) state that the effects of nonnative species may take hundreds of years to become evident; the "blink of an eye" in ecological time. The effects can be to the physical environment, the flora, the fauna, humans directly, or more often, to a combination of these ecosystem elements (Johnson and O'Neil 2001). Under Alternative 1, no cumulative impact on target invasive species (European starlings, pigeons, house sparrows) has been observed or intended. However, in the case of invasive species an attempt to impact may be desirable (or required under EO-13112) at some point in the future. Over the past 200 years, several thousand foreign plant and animal species have become established in the United States. About one in seven has become invasive, leading to problems that, according to figures provided by Cornell University, cost the United States more than $138 billion each year (USDA 1999).

Cumulative impacts of public actions to control depredating birds in the absence or reduced presence of WS can only be speculated upon. However, it is reasonable to expect that as governmental assistance in resolving wildlife conflicts decreases, independent actions increase. The environmental desirability of these actions would be dependent upon the individuals who implement them. Many such actions may be poorly monitored, and public accountability would likely be low. For these reasons, cumulative impacts to the environment may be expected to increase as WS assistance decreases.

The scope of this proposal and the number of depredating birds that might be removed by WS under any of the alternatives would result in no notable cumulative direct or indirect impacts. Wildlife Services maintains ongoing contact with USFWS and ODFW to assure local, state and regional knowledge of wildlife population trends or issues. Wildlife Services would have no cumulative impact on non-target species, or sensitive and protected species. This finding is also made on a national level in the programmatic EIS (USDA 1997, revised).

Impacts of West Nile Virus on Bird Populations West Nile Virus (WNV) has emerged in recent years in temperate regions of North America. Since 1999 the Virus has spread across the United States and was reported to occur in 45 states and the District of Columbia (Center for Disease Control 2005). As of August 2, 2005, avian, animal or mosquito WNV infections have been reported to CDC ArboNET from 38 states in 2005 (CDC 2005a).

West Nile Virus was first reported in Oregon last year (Debess 2005). In 2004 there were five human, 23 birds and 32 horses that tested positive in Oregon. It is common for states to have a larger number of positive cases in the second year as WNV spreads to susceptible birds. The first avian case of WNV was detected in Oregon the week of July 25, 2005 in Jackson County. There have since been four other birds reported positive with WNV in Jackson County (personal communication with Tonja Grainger, Gary Stevens, Jackson County Environmental Health, 2005). Another bird (American crow) tested positive for WNV in Malheur County the week of August 8, 2005 (personal communication with Malheur County Environmental Health employee, 2005).

West Nile Virus is typically transmitted between birds and mosquitoes. Mammals can become infected if bitten by an infected mosquito, but individuals in most species of mammals do not become ill from the virus. The most serious manifestation of WNV is fatal encephalitis in humans, horses, and birds. A total of 284 species, including the 8 target species listed in Section 1.3, has been reported to CDC's WNV avian mortality database from 1999 to present (CDC 2005b). Although birds, particularly crows and jays, can become ill or die if infected with the virus, most survive (CDC 2004). In 2002, WNV surveillance/monitoring programs revealed that corvids accounted for 90% of the dead birds reported with crows representing the highest rate of infection (CDC 2002). Large birds that live and die near humans (i.e., crows) have a greater likelihood of being discovered, therefore the reporting rates tend to be higher for these bird species and are a good "indicator" species for the presence of WNV in a specific area (Audubon 2003). According to US Geological Survey (USGS), National Wildlife Health Center (2003), information is not currently available to know whether or not WNV is having an impact on bird populations in North America.

Wildlife Services' continual monitoring procedures and coordination with bird management agencies (USFWS and ODFW) would ensure that its program would not contribute to significant declines of any bird species.

Christmas Bird Counts for Target Species for 25 Years

Figure 1-European Starlings

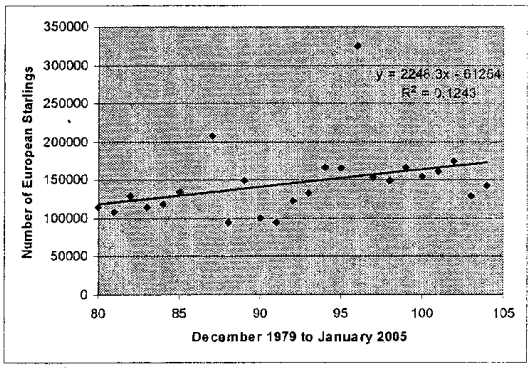


Figure 2-Brewer's Blackbirds

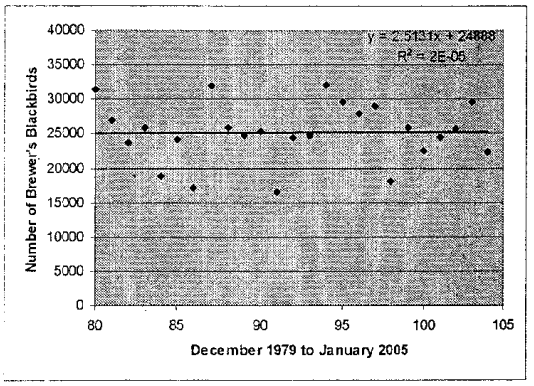


Figure 3-Red-winged Blackbirds

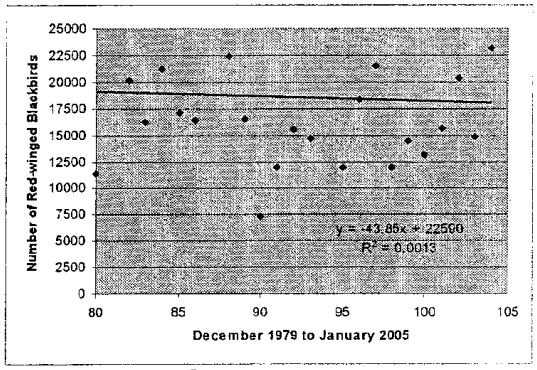


Figure 4-Brown-headed Cowbirds

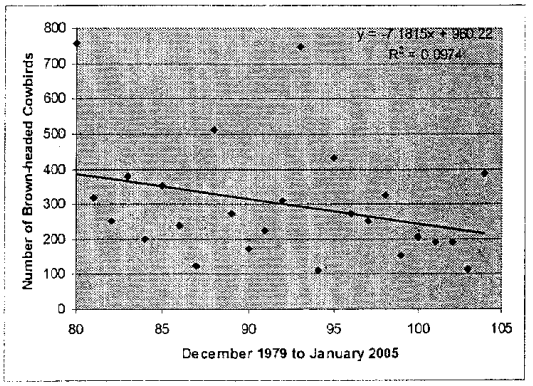


Figure 5-American Crows

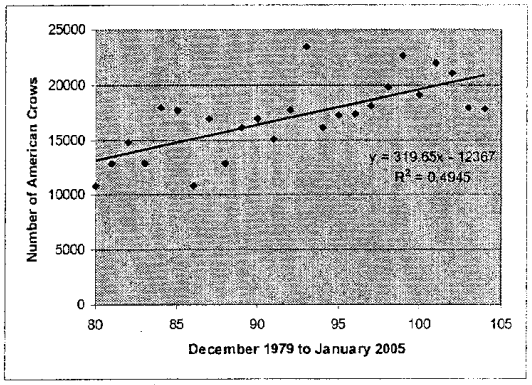


Figure 6-Pigeons

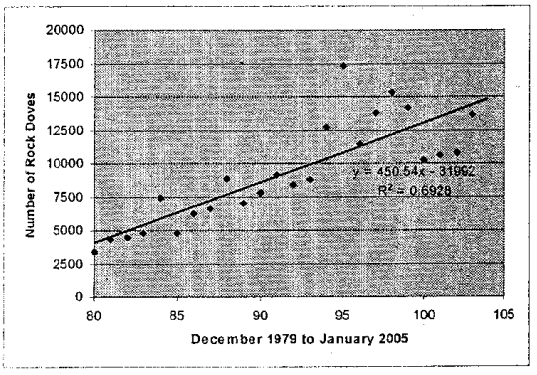
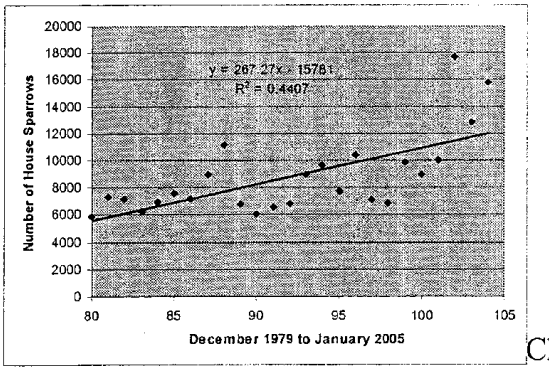


Figure 7-House Sparrows



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APPENDIX A

Table A-1. Information on some diseases transmissible to humans and livestock associated with pigeons, European starlings, and house sparrows. Information taken from Weber (1979).

Disease	Human Symptoms	Potential for Human Fatality	Effects on Domestic Animals
Bacterial:			
Erysipeloid	skin eruption with pain, itching, headaches, chills, joint pain, prostration, fever, vomiting	sometimes - particularly to young children, old or infirm people	serious hazard for the swine industry
Salmonellosis	gastroenteritis, septicaemia, persistent infection	possible, especially in individuals weakened by other disease or old age	causes abortions in mature cattle, possible mortality in calves, decrease in milk production in dairy cattle
Pasteurellosis	respiratory infection, nasal discharge, conjunctivitis, bronchitis, pneumonia, appendicitis, urinary bladder inflammation, abscessed wound infections	rarely	may fatally affect chickens, turkeys and other fowl
Listeriosis	conjunctivitis, skin infections, meningitis in newborns, abortions, premature delivery, stillbirth	sometimes - particularly with newborns	in cattle, sheep, and goats, difficulty swallowing, nasal discharge, paralysis of throat and facial muscles
Viral:			
Meningitis	inflammation of membranes covering the brain , dizziness, and nervous movements	possible — can also result as a secondary infection with listeriosis, salmonellosis, cryptococcosis	causes middle ear infection in swine, dogs, and cats
Encephalitis (7 forms)	headache, fever, stiff neck, vomiting, nausea, drowsiness, disorientation	mortality rate for eastern equine encephalomyelitis may be around 60%	may cause mental retardation, convulsions and paralysis
Mycotic (fungal):			
Aspergillosis	affects lungs and broken skin, toxins poison blood, nerves, and body cells	not usually	causes abortions in cattle
Blastomycosis	weight loss, fever, cough, bloody sputum and chest pains.	rarely	affects horses, dogs and cats
Candidiasis	infection of skin, fingernails, mouth, respiratory system, intestines, and urogenital tract	rarely	causes mastitis, diarrhea, vaginal discharge and aborted fetuses in cattle
Cryptococcosis	lung infection, cough, chest pain, weight loss, fever or dizziness, also causes meningitis	possible especially with meningitis	chronic mastitis in cattle, decreased milk flow and appetite loss
Histoplasmosis	pulmonary or respiratory disease - may affect vision	possible, especially in infants and young children or if disease disseminates to the blood and bone marrow	actively grows and multiplies in soil and remains active long after birds have departed
Protozoal:			
American Trypanosomiasis	infection of mucous membranes of eyes or nose, swelling	possible death in 2-4 weeks	caused by the conenose bug found on pigeons

Toxoplasmosis	inflammation of the retina, headaches, fever, drowsiness, pneumonia, strabismus, blindness, hydrocephalus, epilepsy, and deafness. may cause abortion or still birth in humans, mental retardation	possible	Cattle - muscular tremors, coughing, sneezing,nasal discharge, frothing at the mouth, prostration and abortion. Also affects swine, horses, sheep, chickens, turkeys, dogs and cats.
Rickettsial /Chlamydial:			
Chlamydiosis	pneumonia, flu-like respiratory infection, high fever, chills, loss of appetite, cough, severe headaches, generalized aches and pains, vomiting, diarrhea, hepatitis, insomnia, restlessness, low pulse rate	occasionally, restricted to old, weak or those with concurrent diseases	in cattle, may result in abortion, arthritis, conjunctivitis, and enteritis
Q fever	sudden pneumonitis, chills, fever, weakness, severe sweating, chest pain, severe headaches and sore eyes	possible	may cause abortions in sheep and goats

Table A-2. Summary of some diseases associated with European starlings, blackbirds, pigeons, and house sparrows, affecting livestock, with typical symptoms and comments regarding implications for the listed diseases.

Disease	Livestock affected	Symptoms	Comments
Bacterial:			
Erysipeloid	cattle, swine, horses, sheep, goats, chickens, turkeys, ducks	Swine - arthritis, skin lesions, necrosis, septicemia Sheep - lameness	serious hazard for the swine industry, rejection of swine meat at slaughter due to speticemia, also affects dogs
Salmonellosis	all domestic animals	Cattle - abortions in mature cattle, mortality in calves, decrease in milk production in dairy cattle Swine - colitis	over 1700 serotypes
Pasteurellosis	cattle, swine, horses, rabbits, chickens, turkeys	Poultry - die suddenly without illness pneumonia, bovine mastitis Swine - abortions, septicemia, abscesses	also affects cats and dogs
Avian tuberculosis	chickens, turkeys, swine, cattle, horses, sheep	Poultry - emaciation, decrease in egg production, and death in poultry Cattle - mastitis	also affects dogs and cats
Streptococcosis	cattle, swine, sheep, horses, chickens, turkeys, geese, ducks, rabbits	Poultry - emaciation and death Cattle - mastitis Swine - abscesses and inflamation of the heart and death	pigeons are susceptible and aid in transmission
Yersinosis	cattle, sheep, goats, horses, turkeys, chickens, ducks	Cattle and sheep - abortion	also affects dogs and cats
Listeriosis	chickens, ducks, geese, cattle, horses, swine, sheep, goats	Livestock - difficulty swallowing, nasal discharge, paralysis of throat and facial muscles	also affects cats and dogs
Vibriosis	cattle and sheep	Cattle - often a cause of infertility or early embryonic death Sheep - the only known cause of infectious abortion in late pregnancy	of great economic importance

Viral:			
Meningitis	cattle, sheep, swine, poultry	Cattle - inflamation of the brain, newborn calves unable to suckle	associated with listeriosis, salmonellosis, cryptococcosis
Encephalitis (7 forms)	horses, turkeys, ducks	Livestock - drowsiness, inflamation of the brain	mosquitos serve as vectors
Mycotic (fungal):			
Aspergillosis	cattle, chickens, turkeys, and ducks	Cattle - abortions	common in turkey poults
Blastomycosis	weight loss, fever, cough, bloody sputum and chest pains.	Symptoms rare in livestock	affects horses, dogs and cats
Candidiasis	cattle, swine, sheep, horses, chickens, turkeys	Cattle - mastitis, diarrhea, vaginal discharge, and aborted fetuses	causes unsatisfactory growth in chickens
Cryptococcosis	cattle, swine, horses	Cattle - chronic mastitis, decreased milk flow and appetite loss	also affects dogs and cats
Histoplasmosis	horses cattle and swine	Cattle and swine - chronic cough, loss of appetite, weakness, depression, diarrhea, extreme weight loss	actively grows and multiplies in soil and remains active long after birds have departed
Coccidiosis	poultry, cattle, and sheep	Poultry - bloody diarrhea, dehydration, retardation of growth	almost always present in house sparrows; also found in pigeons and European starlings
Protozoal:			
American trypanosomiasis	cattle, swine, horses, sheep, chickens, turkeys	Livestock - infection of mucous membranes of eyes or nose, swelling possible death in 2-4 weeks	caused by the conenose bug found on pigeons
Toxoplasmosis	cattle, swine, horses, sheep, chickens, turkeys	Cattle - muscular tremors, coughing, sneezing, nasal discharge, frothing at the mouth, prostration and abortion	also affects dogs and cats
Rickettsial/ Chlamydial:			
Chlamydiosis	cattle, horses, swine, sheep, goats, chickens, turkeys, ducks, geese	Cattle - abortion, arthritis, conjunctivitis, enteritis	also affects dogs and cats and many wild birds and mammals
Q fever	affects cattle, sheep, goats, and poultry	Sheep and goats - may cause abortions	can be transmitted by infected ticks

APPENDIX B

WILDLIFE SERVICES DAMAGE MANAGEMENT METHODS

NON-LETHAL METHODS - NON-CHEMICAL

Agricultural producer and property owner practices. These consist primarily of non-lethal preventive methods such as cultural methods and habitat modification. Cultural methods and other management techniques are implemented by the agricultural producer and property owners. Producers and property owners are encouraged to use these methods, based on the level of risk, need, and professional judgement on their effectiveness and practicality. Producer and property owner practices recommended by WS include:

Habitat modification. This method is an integral part of IWDM. Habitat can be managed to not attract certain bird species or to repel certain birds based on a change in environment that they do not prefer (i.e., removing water or food sources, night feeding, enclosed buildings, etc.). Eliminating nesting, roosting, loafing or feeding sites will often assist in minimizing wildlife damage.

Animal behavior modification. This refers to tactics that alter the behavior of wildlife to reduce damages. Animal behavior modification may use scare tactics or exclusion to deter or repel birds that cause loss or damage (Twedt and Glahn 1982). Some but not all devices used to accomplish this are:

Scaring devices such as propane exploders, pyrotechnics, electronic guards, scare crows, and audio distress/predator vocalizations, are often not practical under large feedlot situations because of the disturbance to livestock, although livestock would habituate to the noise. Birds, too, quickly learn to ignore scaring devices if the birds' fear of the methods is not reinforced with shooting or other tactics. Scaring devices (e.g., distress calls, helium filled eye spot balloons, silhouettes, mirrors) can be effective but usually for only a short time before birds become accustomed and learn to ignore them (Schmidt and Johnson 1984, Bomford 1990, Rossbach 1975, Graves and Andelt 1987, Mott 1985, Shirota et al. 1983, Conover 1982, Arhart 1972). Mylar tape has produced mixed results in its effectiveness to frighten birds (Dolbeer et al. 1986, Tobin et al. 1988).

Exclusions can be effective but are often cost-prohibitive, particularly because of the aerial mobility of birds which require overhead barriers as

well as conventional netting. Exclusion adequate to stop bird movements can also restrict movements of livestock, people and other wildlife (Fuller-Perrine and Tobin 1993). Heavy plastic strips hung vertically in open doorways have been successful in some situations in excluding birds (Johnson and Glahn 1994). Plastic strips, however, can prevent filling of the feed troughs at livestock feeding facilities or can be covered up when the feed is poured into the trough by the feed truck. They are not practical for open-air feedlot operations that are not housed in buildings.

Nest destruction is the removal of nesting materials during the construction phase of the nesting cycle. Nest destruction would only be applied when dealing with a single or very few birds. This method is used to discourage birds from constructing nests in areas which may create nuisances for home and business owners. Heusmann and Bellville (1978) reported that nest removal was an effective but time-consuming method because problem bird species are highly mobile and can easily return to damage sites from long distances, or because of high populations. This method poses no imminent danger to pets or the public.

LETHAL METHODS - MECHANICAL

Live traps include:

Clover, funnel, and common pigeon traps are enclosure traps made of nylon netting or hardware cloth and come in many different sizes and designs, depending on the species of birds being captured. The entrance of the traps also vary greatly from swinging-door, one-way door, funnel entrance, to tip-top sliding doors. Traps are baited with grains or other food material which attract the target birds. Wildlife Services' standard procedure when conducting pigeon trapping operations is to ensure that an adequate supply of food and water is in the trap to sustain captured birds for several days. Active traps are checked daily, every other day, or as appropriate, to replenish bait and water and to remove captured birds.

Decoy traps are used by WS for preventive and corrective damage management. Decoy traps are similar in design to the Australian Crow Trap as reported by Johnson and Glahn (1994) and McCracken (1972). Live decoy birds of the same species

that are being targeted are usually placed in the trap with sufficient food and water to assure their survival. Perches are configured in the trap to allow birds to roost above the ground and in a more natural position. Feeding behavior and calls of the decoy birds attract other birds which enter and become trapped themselves. Active decoy traps are monitored daily, every other day, or as appropriate, to remove and euthanize excess birds and to replenish bait and water. Decoy traps and other cage/live traps, as applied and used by WS, pose no danger to pets or the public and if a pet is accidentally captured in such traps, it can be released unharmed.

Nest box traps are used by WS for corrective damage management and are effective in capturing local breeding and post breeding starlings and other targeted secondary cavity nesting birds (DeHaven and Guarino 1969, Knittle and Guarino 1976).

Shooting is more effective as a dispersal technique than as a way to reduce bird densities when large number of birds are present. Normally shooting is conducted with shotguns or air rifles. Shooting is a very individual specific method and is normally used to remove a single offending bird. However, at times, a few birds could be shot from a flock to make the remainder of the birds more wary and to help reinforce non-lethal methods. Shooting can be relatively expensive because of the staff hours sometimes required (USDA 1997, revised). It is selective for target species and may be used in conjunction with the use of spotlights, decoys, and calling. Shooting with shotguns, air rifles, or rim and center fire rifles is sometimes used to manage bird damage problems when lethal methods are determined to be appropriate. The birds are killed as quickly and humanely as possible. All firearm safety precautions are followed by WS when conducting IWDM activities and all laws and regulations governing the lawful use of firearms are strictly complied with.

Firearm use is very sensitive and a public concern because of safety issues relating to the public and misuse. To ensure safe use and awareness, WS employees who use firearms to conduct official duties are required to attend an approved firearms safety and use training program within 3 months of their appointment and a refresher course every 3 years afterwards (USDA 2005). Wildlife Services employees who carry firearms as a condition of employment, are required to sign a form certifying that they meet the criteria as stated in the *Lautenberg Amendment* which prohibits firearm possession by anyone who has been convicted of a misdemeanor crime of domestic violence.

LETHAL METHODS - CHEMICAL

All chemicals used by WS are registered under Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) (administered by the EPA and ODA) or by the Food and Drug Administration. Wildlife Services personnel that use chemical methods are certified as pesticide applicators by ODA and are required to adhere to all certification requirements set forth in FIFRA and Oregon pesticide control laws and regulations. Chemicals are only used on private, public, or tribal property sites with authorization from the property owner/manager.

CO2 is sometimes used to euthanize birds which are captured in live traps and when relocation is not a feasible option. Live birds are placed in a container such as a plastic 5-gallon bucket or chamber and sealed shut. CO2 gas is released into the bucket or chamber and birds quickly die after inhaling the gas. This method of euthanasia is approved by the American Veterinary Medical Association.

DRC-1339 is the principal chemical method that would be used for starling and pigeon damage management in the proposed action. For more than 30 years, DRC-1339 has proven to be an effective method of starling, blackbird, and pigeon control at feedlots, dairies, airports, and in urban areas (West et al. 1967, Besser et al. 1967, Decino et al. 1966). Studies continue to document the effectiveness of DRC-1339 in resolving starling problems at feedlots (West and Besser 1976, Glahn 1982, Glahn et al. 1987) and Blanton et al. (1992) reports that DRC-1339 appears to be a very effective, selective, and safe means of urban pigeon population reduction.

The toxicant DRC-1339 is a slow acting avicide that is registered (Appendix C) with the EPA for reducing damage from several species of birds, including blackbirds, starlings, pigeons, crows. It was developed as an avicide because of its differential toxicity to mammals. While DRC-1339 is highly toxic to sensitive species, it is only slightly toxic to non-sensitive birds, predatory birds, and mammals (USDA 1997, revised, Appendix P). For example, starlings, a highly sensitive species, require a dose of only 0.3 mg/bird to cause death (Royall et al. 1967). Most bird species that are responsible for damage, including starlings, blackbirds, pigeons, and crows are highly sensitive to DRC-1339. Many other bird species such as raptors, and eagles are classified as non-sensitive. Numerous studies show that DRC-1339 poses minimal risk of primary poisoning to non-target and T&E species (USDA 1997, revised). Secondary poisoning has not been observed with DRC-1339 treated baits. During research studies, carcasses of birds which died from DRC-1339 were fed to raptors and scavenger mammals for 30 to 200 days with no symptoms of secondary poisoning observed (Cunningham et al. 1981). This can be attributed to relatively low toxicity to species that might scavenge on blackbirds and starlings killed by DRC-1339 and its tendency to be almost completely metabolized in the target birds which leaves little residue to be

ingested by scavengers. Secondary hazards of DRC-1339 are almost non-existent. DRC-1339 acts in a humane manner producing a quiet and apparently painless death.

Toxicant DRC-1339 is unstable in the environment and degrades rapidly when exposed to sunlight, heat, or ultra violet radiation. It is highly soluble in water but does not hydrolyze and degradation occurs rapidly in water. Avicide DRC-1339 tightly binds to soil and has low mobility. The half life is about 25 hours, which means it is nearly 100% broken down within a week, and identified metabolites (i.e., degradation chemicals) have low toxicity. Aquatic and invertebrate toxicity is low (USDA 1997, revised). Appendix P of USDA (1997, revised) contains a thorough risk assessment of DRC-1339 and the reader is referred to that source for a more complete discussion. That assessment concluded that no adverse effects are expected from use of DRC-1339.

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APPENDIX C
Pesticide Labels

Appendix D

AUTHORITY AND COMPLIANCE

USDA-APHIS-Wildlife Services is the lead agency for this EA. Cooperating agencies include Oregon Department of Fish and Wildlife (ODFW), Oregon Department of Agriculture (ODA), and Oregon Department of Human Services (ODHS). The cooperating agencies provided input to this EA and will continue to participate according to their authorities and responsibilities.

USDA-APHIS-Wildlife Services (WS)

Wildlife Services is authorized by law to protect American agriculture and other resources from damage associated with wildlife. The primary statutory authority for the WS program is the Act of March 2, 1931, as amended (7 United States Code (U.S.C.) 426-426c; 46 Stat. 1468), which provides that:

> *"The Secretary of Agriculture is authorized and directed to conduct such investigations, experiments, and tests as he may deem necessary in order to determine, demonstrate, and promulgate the best methods of eradication, suppression, or bringing under control on national forests and other areas of the public domain as well as on state, Territory or privately owned lands of mountain lions, wolves, coyotes, bobcats, prairie dogs, gophers, ground squirrels, jackrabbits, brown tree snakes, and other animals injurious to agriculture, horticulture, forestry, animal husbandry, wild game animals, furbearing animals, and birds, and for the protection of stock and other domestic animals through the suppression of rabies and tularemia in predatory or other wild animals; and to conduct campaigns for the destruction or control of such animals. Provided that in carrying out the provisions of the Section, the Secretary of Agriculture may cooperate with States, individuals, and public and private agencies, organizations, and institutions."*

Since 1931, with the changes in societal values, WS policies and its programs place greater emphasis on the part of the Act discussing "bringing (damage) under control", rather than "eradication" and "suppression" of wildlife populations. In 1988, Congress strengthened the legislative mandate of WS with the Rural Development, Agriculture, and Related Agencies Appropriations Act. This Act states, in part:

> *"That hereafter, the Secretary of agriculture is authorized, except for urban rodent control, to conduct activities and to enter into agreements with States, local jurisdictions, individuals, and public and private agencies, organizations, and institutions in the control of nuisance mammals and birds, and those mammals and bird*

species that are reservoirs for zoonotic diseases, and to deposit any money collected under any such agreement into the appropriation accounts that incur the costs to be available immediately and to remain available until expended for Animal Damage Control activities."

Further, in 2001, Congress amended WS authority in the Agriculture Appropriations Bill, which provided that:

"The Secretary of Agriculture may conduct a program of wildlife services with respect to injurious animal species and take any action the Secretary considers necessary in conducting the program. The Secretary shall administer the program in a manner consistent with all of the wildlife services authorities in effect on the day before the date of the enactment of the Agriculture, Rural Development, Food and Drug Administration, and Related agencies Appropriations Act, 2001."

To fulfill this Congressional direction, WS conducts activities to prevent or reduce wildlife damage to agricultural, industrial and natural resources, property, and threats to public health and safety on private and public lands in cooperation with other federal, state and local agencies, private organizations, and individuals.

The imminent threat of damage or loss of resources is often sufficient for individual actions to be initiated. The need for action is derived from the specific threats to resources or the public. WS' mission is to improve the coexistence of people and wildlife by providing Federal leadership to reduce problems.

U.S. Fish and Wildlife Service (USFWS)

U.S. Fish and Wildlife Service (USFWS)The USFWS is the primary Federal agency responsible for conserving, protecting, and enhancing the Nation's fish and wildlife resources and their habitats. The mission of USFWS is to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people. The USFWS has specific responsibilities for threatened and endangered (T&E) species and migratory birds.

The USFWS regulates take of bird species that are listed as migratory under the MBTA and those that are listed as T&E under the Endangered Species Act (ESA). The USFWS authority is based on the MBTA of 1918 (as amended)

Oregon Department of Fish and Wildlife (ODFW)

The ODFW has the responsibility to manage all protected and classified wildlife in Oregon, regardless of the land class on which the animals are found. It is the policy of the State of

Oregon that wildlife be managed to prevent serious depletion of any indigenous species and to provide the optimum recreational and aesthetic benefits for present and future generations of the State. Included in this wildlife policy is maintaining all species of wildlife at optimum levels (Oregon Revised Statues (ORS) 496.012, 496.118).

Oregon Department of Agriculture (ODA)

The Oregon Department of Agriculture aids citizens in resolving certain types of conflicts with wildlife. The ODA currently has a Memorandum of Understanding, Cooperative Agreement, and Annual Work plan with WS. These documents establish a cooperative relationship between WS and ODA, outline responsibilities, and set forth annual objectives and goals of each agency for resolving wildlife damage issues in Oregon.

Oregon Department of Human Services (ODHS)

The Oregon Department of Human Services assists with public health in regards to disease prevention, environmental health, health data and records, immunizations, and operates the public health laboratory. This department also is responsible for assisting with acute and communicable diseases, environmental and occupational epidemiology which deals with pesticides (ODHS 2005).

Federal Aviation Administration (FAA)

The Federal Aviation Administration is the Federal agency responsible for developing and enforcing air transportation safety regulations and is authorized to reduce wildlife hazards at commercial and non-commercial airports. Many of these regulations are codified in the Federal Aviation Regulations (FAR). The FAA is responsible for setting and enforcing the FARs and policies to enhance public safety. For certificated airports, 14 Code of Federal Regulations (CFR), Part 139.337 (Wildlife Hazard Management) directs the airport sponsor to conduct a wildlife hazard assessment if 1) an air carrier aircraft experiences multiple wildlife strikes, 2) an air carrier aircraft experiences a damaging collision with wildlife other than birds or 3) if wildlife of a size or in numbers capable of causing a hazard to aircraft safety is observed to have access to any airport flight pattern or movement area. At non-certificated airports, the FAA also expects that the airport be aware of wildlife hazards in and around their airport and take corrective action if warranted; the FAA uses Advisory Circular 150/5200-33 to guide their decision making process.

Wildlife Services and FAA have a cooperative relationship which is outlined in a 1989 MOU between the two agencies. The MOU established a cooperative relationship for wildlife hazard management to benefit public safety.

Compliance with Federal Laws, Executive Orders and Regulations

WS consults and cooperates with other Federal and state agencies as appropriate to ensure that all WS activities are carried out in compliance with all applicable Federal laws.

National Environmental Policy Act (NEPA) (Public Law 91-190, 42 U.S.C. 4321 et seq.): Wildlife Services follows Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (40 CFR 1500 et seq.), USDA (7 CFR 1b), and APHIS NEPA Implementing Procedures (7 CFR 372) as a part of the NEPA decision-making process. The National Environmental Policy Act sets forth the requirement that all major Federal actions be evaluated in terms of their potential to significantly affect the quality of the human environment.

Pursuant to NEPA and CEQ regulations, this EA documents the analysis of a proposed Federal actions' impact, informs decision-makers and the public of reasonable alternatives capable of avoiding or minimizing adverse impacts, and serves as a decision-aiding mechanism to ensure that the policies and goals of NEPA are infused into Federal agency actions. The direct, indirect, and cumulative impacts of the proposed action are analyzed.

Endangered Species Act (ESA): Under the ESA, all Federal agencies are charged with a responsibility to conserve threatened and endangered species and to utilize their authorities in furtherance of the purposes of the ESA (Sec. 2(c)). Wildlife Services conducts Section 7 consultations with the USFWS to utilize the expertise of the USFWS to ensure that, "any action authorized, funded or carried out by such an agency...is not likely to jeopardize the continued existence of any endangered or threatened species..." (Sec. 7 (a) (2)). Wildlife Services has determined that the actions discussed in this EA will not affect threatened or endangered species.

Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711; 40 stat. 755), as amended: The MBTA provides the USFWS regulatory authority to protect species of birds that migrate outside the United States. The law prohibits any "take" of these species by private entities, except as permitted by the USFWS; therefore the USFWS issues permits to private entities for reducing bird damage (50 CFR 21.41). Starlings, pigeons, and house sparrows are not classified as protected migratory birds and therefore have no protection under the MBTA. The USFWS depredation permits are also not required for red-winged and Brewer's blackbirds, cowbirds, and crows, ". . .committing or about to commit depredation upon ornamental or shade trees, agricultural crops, livestock, or wildlife, or when concentrated in such numbers and manner as to constitute a health hazard or other nuisance" (50 CFR 21.43).

The Migratory Bird Treaty Reform Act of 2004 (EPA 2005) clarifies the MBTA required the USFWS to establish a list of nonnative bird species found in the United States which are not

protected by the Act. The USFWS finalized that list on March 15, 2005 (EPA 2005). European starlings and house sparrows were already not listed in the MBTA, and pigeons were included in the final list of nonnative species to be excluded from protections. No effects on migratory birds are expected.

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA): this act requires the registration, classification and regulation of all pesticides in the United States. The EPA is responsible for implementing and enforcing FIFRA. The pesticide DRC-1339 is registered with, and regulated by, the EPA and the ODA. Oregon WS uses DRC-1339 according to label directions as required by the EPA and ODA.

National Historical Preservation Act (NHPA) of 1966 as amended: requires: 1) Federal agencies to evaluate the effects of any Federal undertaking on cultural resources, 2) consult with the State Historical Preservation Office regarding the value and management of specific cultural, archaeological and historic resources, and 3) consult with appropriate American Indian tribes to determine whether they have concerns for traditional cultural resources in areas of these Federal undertakings.

Each of the wildlife damage management methods described in the EA and in Appendix B that might be used operationally by WS do not cause major ground disturbance, do not cause any physical destruction or damage to property, do not cause any alterations of property, wildlife habitat, or landscapes, and do not involve the sale, lease, or transfer of ownership of any property. In general, such methods also do not have the potential to introduce visual, atmospheric, or audible elements to areas in which they are used that could result in effects on the character or use of historic properties. Therefore, the methods that would be used by WS under the proposed action are not generally the types of activities that would have the potential to affect historic properties. If an individual activity with the potential to affect historic resources is planned under an alternative selected as a result of a decision on this EA, then site-specific consultation as required by Section 106 of the NHPA would be conducted as necessary.

There is potential for audible effects on the use and enjoyment of a historic property when methods such as propane exploders, pyrotechnics, firearms, or other noise-making methods are used at or in close proximity to such sites for purposes of hazing or removing nuisance birds or other wildlife. However, such methods would only be used at a historic site at the request of the owner or manager of the site to resolve a damage or nuisance problem, which means such use would be to benefit the historic property. A built-in mitigating factor for this issue is that virtually all of the methods involved would only have temporary effects on the audible nature of a site and can be ended at any time to restore the audible qualities of such sites to their original condition with no further adverse effects. Site-specific consultation as required by Section 106 of the NHPA would be conducted as necessary in those types of situation.

Environmental Justice and Executive Order 12898- *"Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations":* Environmental Justice (EJ) is a movement promoting the fair treatment of people of all races, income and culture with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Environmental Justice has been defined as the pursuit of equal justice and equal protection under the law for all environmental statues and regulations without discrimination based on race, ethnicity, or socioeconomic status (the EJ movement is also known as Environmental Equity–which is the equal treatment of all individuals, groups or communities regardless of race, ethnicity, or economic status, from environmental hazards).

Environmental Justice is a priority within APHIS and WS. Executive Order 12898 requires Federal agencies to make EJ part of their mission, and to identify and address disproportionately high and adverse human health and environmental effects of Federal programs, policies and activities on minority and low-income persons or populations. To meet this, WS developed a strategy that: 1) identifies major programs and areas of emphasis to meet the intent of the EO, 2) minimize any adverse effects on the human health and environment of minority and low-income persons or populations, and 3) carries out the APHIS mission. To that end, APHIS operates according to the following principles: 1) promote outreach and partnerships with all stakeholders, 2) identify the impacts of APHIS activities on minority and low-income populations, 3) streamline government, 4) improve the day-to-day operations, and 5) foster non-discrimination in APHIS programs. In addition, APHIS plans to implement EO 12898 principally through its compliance with the provisions of NEPA.

All WS activities are evaluated for their impact on the human environment and compliance with EO 12898 to insure EJ. Wildlife Services personnel use wildlife damage management methods as selectively and environmentally conscientiously as possible. It is not anticipated that the proposed action would result in any adverse or disproportionate environmental impacts to minority and low-income persons or populations.

Protection of Children from Environmental Health and Safety Risks (EO 13045): Children may suffer disproportionately from environmental health and safety risks for many reasons, including their development physical and mental status. Because WS makes it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children, WS has considered the impacts that this proposal might have on children. The proposed wildlife damage management would occur by using only legally available and approved damage management methods where it is highly unlikely that children would be adversely affected. For these reasons, WS concludes that it would not create an adverse environmental health or safety risk to children from implementing this proposed action. In contrast, the proposed action may reduce adverse environmental health or safety risks by reducing risks (i.e., disease, bird/aircraft strikes, etc. to which children may potentially be exposed.

Executive Order 13112- Invasive Species: This Order establishes guidance to Federal agencies to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause. The EO, in part, states that each Federal agency whose actions may affect the status of invasive species shall, to the extent practicable and permitted y law; 1) reduce invasion of exotic species and the associated damages, 2) monitor invasive species population, provide for restoration of native species and habitats, 3) conduct research on invasive species and develop technologies to prevent introduction, and 4) provide for environmentally sound control, promote public education on invasive species.

The EO also established an Invasive Species Council (Council) whose members include the Secretary of State, the Secretary of the Treasury, the Secretary of Defense, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, the Secretary of Transportation, and the Administrator of the EPA. The Council shall be co-chaired by the Secretary of the Interior, the Secretary of agriculture, and the Secretary of Commerce. The Council oversees: 1) the implementation of this order, 2) that Federal agencies activities concerning invasive species are coordinated, complementary, cost-efficient, and effective, 3) the development of recommendations for international cooperation in addressing invasive species, 4) develop, in consultation with the CEQ, guidance to Federal agencies, 5) facilitate development of coordinated network among federal agencies to document, evaluate, and monitor impacts from invasive species on the economy, the environment, and human health, 6) facilitate establishment of a coordinated, up-to-date information-sharing system that utilizes, and 7) prepare and issue a national invasive Species Management Plan.